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Special Note:
This year we have included three “Extended Sessions”. These sessions run over two one hour sessions plus the break in between (length will vary depending on presenter/topic). If you are attending an extended session, for example Session A-B this will replace your choices for both Session A and Session B.
Welcome to the 2013 MAV Annual Conference.

This year our conference reaches its golden age with this being the 50th Annual Conference for the MAV. It is timely then that we pause to reflect on this year’s conference theme ‘The Mathematics of Planet Earth.’ As many of you will have realised this year’s theme has been chosen because this is the International Year of the Mathematics of Planet Earth.

As you will see from the following pages we have provided a vast array of presentations for you to choose from. We are also very pleased to be able to offer a range of technology based sessions across the conference. On behalf of the conference committee I would like to thank all our presenters this year. The fact we are able to offer such quality presentations from people across all sectors of the education community is a particular strength that is recognised by all who attend the conference. Of particular note is that this year’s conference has presenters representing Early Childhood settings. We warmly welcome them and hope that this is an area in which we will continue to grow over future conferences.

Our anniversary lecture this year will be presented by Michael McCarthy from the School of Botany at the University of Melbourne. Michael will share with us his knowledge about the Mathematics behind the modelling of global environmental problems, emerging infectious diseases and climate change. Given the feedback we received from Michael’s presentation for the MAV AGM earlier in the year I’m sure this presentation will have plenty to offer and stimulate the thinking of every delegate.

During our closing ceremony this year Mike Askew from Monash University promises to provide us with some insight into how we maximise the impact those ‘aha’ moments have on the learning of our students. While as Mike states, we can never plan for these moments, we can be prepared for them by thinking about our lessons in terms of the balance between the structure and freedom provided.

Another key strength of our conference is the ongoing support we receive from our sponsors, Texas Instruments, Casio and Oxford University Press. Please take the time to visit them and our other displayers in the exhibition hall.

Thank you to Julie Allen and her team from the Full Pretzel and the team in the MAV office who have worked tirelessly this year beside the conference committee in order to bring this conference to you. I know that this dedication to provide all our delegates with a first class conference continues well past the time the last delegate leaves for home on the Friday.

I look forward to seeing you all at La Trobe University in December.

Michelle Huggan
Conference Convenor
PROGRAM

THURSDAY 5th DECEMBER
8:00am - 5:00pm Registration Open
8:00am - 5:50pm Exhibition Open
9:00am - 9:10am Welcome - Michelle Huggan, Conference Convenor
9:10am - 9:25am Publications Awards - Dr Ahmad Samarji, Journals Committee
9:30am - 10:20am Anniversary Lecture - Associate Prof Michael McCarthy
10:20am - 11:10am Morning Tea
11:10am - 12:10pm Session A
11:10am - 1:30pm Session A-B
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1:30pm - 2:30pm Lunch
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3:30pm - 3:50pm Change Over
3:50pm - 4:50pm Session D
4:50pm - 5:50pm Happy Hour
7:30pm - 10:30pm Dinner

FRIDAY 6th DECEMBER
8:00am - 4:30pm Registration Open
8:00am - 2:10pm Exhibition Open
9:00am - 10:00am Session E
10:00am - 10:45am Morning Tea
10:45am - 11:45am Session F
10:45am - 1:10pm Session F-G
11:45am - 12:10pm Change Over
12:10pm - 1:10pm Session G
1:10pm - 2:10pm Lunch
2:10pm - 3:10pm Session H
3:10pm - 3:30pm Change Over
3:30pm - 4:30pm Closing Ceremony - Mike Askew

Extended Sessions:
This year we have included three “Extended Sessions”. These sessions run over two one hour sessions plus the break in between (length will vary depending on presenter/topic). If you are attending an extended session, for example Session A-B this will replace your choices for both Session A and Session B.
GENERAL INFORMATION

Conference Venue: La Trobe University
Kingsbury Drive
Bundoora Victoria

KEYNOTE SPEAKERS:
◊ Dr Catherine Attard - University of Western Sydney, NSW
◊ Douglas Butler - ICT Training Centre, Oundle, UK
◊ Dr Mary Coupland, AAMT, NSW
◊ Dr Tanya Hill - Melbourne Museum/Scienceworks, VIC
◊ Professor Marnie Hughes-Warrington - Australian National University, ACT
◊ Dr Calvin Irons - Queensland University of Technology, QLD
◊ Dr Helen Keates - The University of Queensland, QLD
◊ Narissa Leung - Campbells Creek Primary School, VIC
◊ Jennifer Palisse - Mater Christi College, VIC
◊ Burkard Polster - Monash University, VIC
◊ Marty Ross, VIC
◊ Anthony Speranza - St Marks Primary School, VIC
◊ Dr Gaye Williams - Deakin University, VIC

CONFERENCE OFFICE CONTACT:
Julie Allen - Event Manager
PH: 61 3 9380 2399
MB: 61 411 243 029
Email: jallen@mav.vic.edu.au

The Mathematical Association of Victoria
61 Blyth Street
BRUNSWICK VIC 3056
AUSTRALIA
PH: 61 (0) 3 9380 2399
FX: 61 (0) 3 9389 0399

Cancellation Policy:
Participants who cancel their booking on or prior to Monday 11th November 2013 will receive a refund less a $25 administration fee. All cancellations MUST be in writing and include any documentation already sent out. NO REFUNDS are available after the 11th November 2013. Registration may be transferred to another person.
REGISTRATION INFORMATION

Registration Fees:

1. Session Registration
   - Member Metro: $223
   - Member Non-Metro: $216
   - Non-Member: $289
   - Student: $116
2. Conference Dinner (Thursday 5th December): $76
3. Happy Hour (Thursday 5th December): FREE to registered delegates
4. Lunch (1 per person, per day): FREE to registered delegates

All prices are inclusive of 10% GST.

**SPECIAL CONFERENCE OFFER!!**
Select to attend 2 days of the conference for $578 at the non-member rate and we will include an individual membership for 2014 (valued at $127).

Before you begin you will need to have the following before you start your registration:
1. Your username and password to register online, if unsure ring the MAV office on 61 3 9380 2399.
2. School purchase order number or credit card for payment.
3. Contact at school to approve your registration.
4. List of the sessions you want to attend.

To Register:
1. Go online to http://www.registration.mav.vic.edu.au/
2. Log in using your username (email) and password. If logged in correctly it will display your name.
3. Once logged in, click on the box that has the MAV Annual Conference - choose your sessions, social program, food, accommodation, etc then click confirm.
4. Check the summary and amount you have been charged - If you think you are a member but have been charged as a non-member call our office 61 3 9380 2399.
5. Click on either Purchase Order or Pay Online.
6. You will be asked to put in the name, position and email address of a person of authority to sign off on your registration.
7. Click on “Submit” to complete your registration.
8. Print out a copy of your confirmation for your records.
9. You will receive an automatic email response confirming your registration.

If you do not receive this email within 24 hours your registration has not been completed.

**Note:** After you have registered you may login at any time using your login details to change your sessions or to re-print your confirmation. You cannot change any item that affect the amount transacted and these changes will have to be made by the office.

**Inclusions:**
The Registration Fee includes (per person) - 1 Copy of the Conference Proceedings; morning tea for each day registered; 1 lunch voucher for each day registered; attendance at selected sessions; Happy Hour on Thursday 5th December; and access to industry exhibition.

**Notes:**
◊ Registrations will NOT be processed without full payment or a school purchase order number.
◊ Session numbers are limited and the website will indicate when sessions are full.
◊ Member rates apply to individual members, institutional/school members, Australian Mathematics Associations who are members of AAMT and New Zealand Mathematics educators who are members of the NZAMT.
◊ The MAV reserves the right to cancel presentations if minimum numbers are not reached.

APPLICATIONS CLOSE MONDAY 11th NOVEMBER 2013 AT 5:00PM
Lunch

A number of food outlets at La Trobe University will be serving lunch to conference delegates. You will receive a lunch voucher with confirmation of your registration. This will entitle you to a “MAV Conference Package Lunch” at the following campus outlets:

◊ Ping’s Café Moat (V)
◊ Eagle Café (V)
◊ Charlie’s Coffee & Kebabs (H,V)
◊ Café Xpresso (V)
◊ Veloci Café (V)
◊ Pizza and Pasta (V)
◊ Mamak Rice and Noodle (V)
◊ Café Spice (H,V)
◊ Caffeine Café
◊ Vital@l (V)
◊ Fusion Pizza (V)

(H) - Halal available
(V) - Vegetarian available

When filling in your registration form online you MUST select which outlet you want to get lunch from for each day you are attending. If nothing has been selected your default will be Ping’s Café Moat.

Union Building

Ping’s Café Moat

Thursday
Hot - Lemon Chicken Stir Fry Mix Veg with Steamed Rice PLUS Bottle of Drink
Cold - Roast Chicken and Salad Roll, Vegetarian Sushi PLUS Piece of Fruit PLUS Bottle of Drink

Friday
Hot - Rainbow Steak Stir Fry Mix Veg with Steamed Rice PLUS Bottle of Drink
Cold - Teriyaki Chicken and Salad Roll with Vegetarian Sushi PLUS Piece of Fruit PLUS Bottle of Drink

Eagle Café

Beef Lasagne, Roast Potatoes, Garden Salad PLUS 375ml Soft Drink Can or Water
Vegetable Lasagne, Roast Potatoes, Garden Salad PLUS 375ml Soft Drink Can or Water
Roast Beef, Roast Potatoes, Garden Salad PLUS 375ml Soft Drink Can or Water

Agora Square

Charlie’s Coffee & Kebabs
Freshly made Sandwich/Wrap/Roll PLUS Bottle of Water or Fruit Juice PLUS Piece of Fruit, with either:
Thai Grilled Chicken and Salad
Falafel with Tabouli and Hummus (Vegetarian)
Chicken Schnitzel with Lettuce, Cheese and Mayo
BBQ Chicken and Salad

Café Xpresso

Foccacia/Wrap/Sandwich PLUS Soft Drink PLUS Piece of Fruit (Apple or Banana)

Veloci Café

Grilled Chicken and Salad Focaccia PLUS Piece of Fresh Fruit PLUS Cold Drink PLUS Chocolate Treat
Tandoori Chicken Wrap PLUS Piece of Fresh Fruit PLUS Cold Drink PLUS Chocolate Treat
Beef and Salad Roll PLUS Piece of Fresh Fruit PLUS Cold Drink PLUS Chocolate Treat
Chicken & Avocado Pasta Salad PLUS Piece of Fresh Fruit PLUS Cold Drink PLUS Chocolate Treat
Caesar Salad PLUS Piece of Fresh Fruit PLUS Cold Drink PLUS Chocolate Treat

Pizza and Pasta

Main Meal Vegetarian Option PLUS Fresh Fruit (Banana or Apple) PLUS Water or Juice or Coke or Pepsi
Falafel Tabouli and Humus Wrap PLUS Fresh Fruit (Banana or Apple) PLUS Water or Juice or Coke or Pepsi
Potato and Egg Salad PLUS Fresh Fruit (Banana or Apple) PLUS Water or Juice or Coke or Pepsi
Garden Salad PLUS Fresh Fruit (Banana or Apple) PLUS Water or Juice or Coke or Pepsi
Vegetarian Pizza & Pasta PLUS Fresh Fruit (Banana or Apple) PLUS Water or Juice or Coke or Pepsi
Mamak Rice and Noodle
Chicken, Beef or Vegetarian with Vegetables on Rice or Stirred with Hokkien Noodles with Satay Sauce/Black Bean Sauce/Teriyaki Sauce/Chili Sauce/Oyster Sauce/Sweet Chilli Sauce PLUS Can of Drink

Café Spice
Large Serve Combination of any Two Curries Served with Rice from a Selection of 3 Meat and 3 Vegetarian Curries PLUS 1 Naan Bread PLUS Can of Soft Drink OR Water OR Mango Lassi

Caffeine Café
Gourmet Baguette - Smoked Salmon, Cream Cheese, Salad OR Chicken, Avocado, Mayo, Salad OR Vegetarian Delight
Gourmet Wrap - Garlic Aioli, Falafel, Salad OR Chicken, Avocado, Bacon, Salad
Homemade Vietnamese Rice Paper Roll Pack - Vegetarian OR Prawn OR Teriyaki Chicken (Pack of 3 Rolls)
Homemade Sushi - Assortment of Vegetarian, Chicken, Salmon, Prawn, Crab, Tempura Prawn, Chicken (Pack of 3 Rolls)
Brown Rice Salad on Thursday (Vegetarian Included)
Quinoa Salad on Friday (Vegetarian Included)
PLUS Regular Drink (Coffee, Water, Juice, Can of Soft Drink)
PLUS Assorted Fresh Fruit OR Melting Moment (sweet treat)

Vital@t
Chicken Tender Wrap PLUS Can of Soft Drink PLUS Piece of Fruit
Turkish Roll PLUS Can of Soft Drink PLUS Piece of Fruit
Baguette PLUS Can of Soft Drink PLUS Piece of Fruit
Rice Paper Roll PLUS Can of Soft Drink PLUS Piece of Fruit
Steam Duplings PLUS Can of Soft Drink PLUS Piece of Fruit
BBQ Chicken Roti PLUS Can of Soft Drink PLUS Piece of Fruit
Bagel PLUS Can of Soft Drink PLUS Piece of Fruit
Large Salad PLUS Can of Soft Drink PLUS Piece of Fruit

Fusion Pizza
2 Slices of Pizza PLUS Small Chips PLUS Potato Cake or Dim Sim or Hash Brown PLUS Soft Drink PLUS Piece of Fruit
Large Pasta or Lasagna PLUS Small Chips PLUS Soft Drink PLUS Piece of Fruit

HAPPY HOUR
DATE: Thursday 5th December 4:50pm - 5:50pm
VENUE: Exhibition, Main Hall, Union Building
Happy Hour is free of charge and open to all registered delegates and exhibitors. Please indicate whether you will be attending this event when registering online.

CONFERENCE DINNER
DATE: Thursday 5th December
7:30pm - 10:30pm
VENUE: Swinburne University 3D Experience followed by Dinner at Hawthorn Hotel, 481 Burwood Rd, Hawthorn
Come on a 3D journey with us across the planet and into space. Something a little different this year, we will be going to the Centre for Astrophysics and Supercomputing to experience one of their many 3D films with a guided tour using mathematics. Following this we will all come together at The Hawthorn Hotel for a three course meal and drinks.

The price $76 includes travel from La Trobe to the venue, 3D show, three course dinner, beer, wine and soft drinks.

A bus will pick up dinner attendees from La Trobe University at 6:00pm and then pick up at Rydges Hotel.

At the end of the evening the bus will then drop off those staying at Rydges and Glen College.
**ACCOMMODATION**

**RYDGES HOTEL, PRESTON**
Located a short 10 minute drive from La Trobe University, this is a 4 star hotel. A shuttle bus will operate between Rydges and La Trobe University on the Thursday and Friday of the conference.

**Option 1**
- **Student Rooms**
  These rooms consist of 1 single bed 190cm long X 94cm wide and offer a work station with high speed internet, Foxtel, tea & coffee making facilities, small bathroom with shower over toilet and self controlled air conditioning.

  Student Room $ 87.00 Per Room/Per Night

**Option 2**
- **Sleep & Go Queen or Twin**
  Featuring floor to ceiling glass, these rooms consist of either 2 single beds or 1 queen bed and offer a work station with high speed internet, Foxtel, tea & coffee making facilities, wet bathroom style en-suite and self controlled air conditioning.

  Sleep & Go Queen/Twin $ 142.00 Per Room/Per Night

**Option 3**
- **1 Bed Manhattan Room**
  Simply stunning 1 Bed Manhattan offers 1 queen Rydges dream bed, self contained kitchenette including stove top, microwave, fridge, lounge & dining. All rooms feature work station, high speed internet, Foxtel, self controlled reverse cycle air conditioning / heating, minibar, LCD TV & in room safe.

  1 Bed Manhattan Room $ 197.00 Per Room/Per Night

**Option 4**
- **2 Bed Manhattan Room**
  As per the 1 Bed Manhattan but with 2 queen Rydges Dream beds.

  2 Bed Manhattan Room $ 263.00 Per Room/Per Night

All rooms are subject to availability. We have placed a limited hold on rooms so book early to secure a room.

**MENZIES COLLEGE**
- **Student Rooms (availability on application)**
  Menzies College is located on campus at La Trobe University. These are student rooms used during the year so are not spacious. Please note also that there are a number of other patrons staying at the college at the same time so there may be some noise during your stay. These rooms consist of 1 single bed. Bathrooms are shared with 1 bathroom for every 4 rooms. You will need to bring your own toiletries and soap. The below prices do not include breakfast.

  This accommodation will not be available via our online booking system. To book this type of accommodation go to [www.mav.vic.edu.au/activities/professional-learning-opportunities/annual-conference.html](http://www.mav.vic.edu.au/activities/professional-learning-opportunities/annual-conference.html) or contact the University directly:

  La Trobe University Residential Services
  Ph: +61 3 9479 2875
  Fax: +61 3 9479 3690

  Student Room 1 night only $ 90.00 Per Room
  2 or more nights $ 45.00 Per Room/Per Night
Mathematics for Conservation Decisions
Michael McCarthy
School of Botany (Quantitative and Applied Ecology, University of Melbourne; Deputy Director of the ARC Centre of Excellence for Environmental Decisions)

Global environmental problems include loss of biodiversity, emerging infectious diseases, and climate change. There are insufficient resources to eliminate completely this broad range of environmental problems, so it is necessary to prioritize. In this talk I describe how the efficiency of different conservation strategies can be evaluated and analysed to determine the best use of limited management resources. Mathematical models are used as the basis of these analyses. Example applications include models of the dynamics of frog populations, searching for invasive and native species, and field experiments to evaluate the performance of our mathematical models.

Michael McCarthy teaches and conducts research at The University of Melbourne in the area of environmental science, with a focus on using mathematical modelling to inform better management decisions. He has worked at The Australian National University, The University of Adelaide, and UC Santa Barbara. Michael helps lead a large research group in the School of Botany (Quantitative and Applied Ecology; qaeco.com), and is the deputy director of the ARC Centre of Excellence for Environmental Decisions.

CLOSING CEREMONY
Friday 6th December - 3:30pm-4:30pm, Agora Theatre

Structure and Freedom: Preparing for the Unexpected in Mathematics Lessons
Mike Askew
Foundation Chair Professor of Primary Education, Monash University

Good mathematics lessons are, I think, punctuated by ‘aha’ moments, moments of insight either by students into the mathematics or by teachers into students’ thinking. But as teachers we cannot control exactly how and when moments of insight will emerge in lessons. Such moments cannot be planned for, in the sense of ‘engineering’ them into being. They can, however, be prepared for by thinking through lessons in terms of the balance of structure and freedom provided. In this talk I will look at a number of classroom examples and we will work on tasks to exemplify structure and freedom in action. And perhaps there will be a few ‘aha’ moments.

Mike Askew took up post as Foundation Chair Professor of Primary Education at Monash in September 2010, and prior to that he was Chair Professor of Mathematics Education at King’s College London. He is internationally regarded as a leading expert on mathematics education, particularly in the primary phase. He has directed many research projects including the influential ‘Effective Teachers of Numeracy in Primary Schools’, which was drawn upon by the Australian Federal Government in developing policy on numeracy teaching. Other projects have included ‘Raising Attainment in Numeracy’ and ‘Mental Calculations: Interpretations and Implementation’. He was deputy director of the five-year Leverhulme Numeracy Research Programme, examining teaching, learning and progression in numeracy to students from age 5 to age 11.
### Session Summary

#### SESSION A: 11:10am-12:10pm Thursday 5th December

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Time</th>
<th>Session</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK1</td>
<td>11:10am-12:10pm</td>
<td>F to 12</td>
<td>Grouping: Successes, Surprises and Catastrophes</td>
</tr>
<tr>
<td>AK2</td>
<td>11:10am-12:10pm</td>
<td>8 to 12</td>
<td>What's New and Exciting on the Web</td>
</tr>
<tr>
<td>A3</td>
<td>11:10am-12:10pm</td>
<td>Pre-K to F</td>
<td>Authentic, Play Based Maths in the Early Years</td>
</tr>
<tr>
<td>A4</td>
<td>11:10am-12:10pm</td>
<td>K to 2</td>
<td>Working Mathematically with Infants</td>
</tr>
<tr>
<td>A5</td>
<td>11:10am-12:10pm</td>
<td>F to 7</td>
<td>POP Maths for the Primary School</td>
</tr>
<tr>
<td>A6</td>
<td>11:10am-12:10pm</td>
<td>F to 9</td>
<td>Improving NAPLAN Results with a Problem Based Maths Approach</td>
</tr>
<tr>
<td>A7</td>
<td>11:10am-12:10pm</td>
<td>F to 10</td>
<td>Digital Resources That Support the Teaching of Mathematics</td>
</tr>
<tr>
<td>A8</td>
<td>11:10am-12:10pm</td>
<td>F to 12</td>
<td>Connect with Maths, Your New Online Community</td>
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<td>A9</td>
<td>11:10am-12:10pm</td>
<td>F to 12</td>
<td>Revealing Quality Teaching</td>
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<td>A10</td>
<td>11:10am-12:10pm</td>
<td>F to 12</td>
<td>Mathletics Assessment and Reporting</td>
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<td>A11</td>
<td>11:10am-12:10pm</td>
<td>1 to 4</td>
<td>Musical Algebra</td>
</tr>
<tr>
<td>A12</td>
<td>11:10am-12:10pm</td>
<td>1 to 6</td>
<td>The Concrete-Pictorial-Abstract (CPA) Approach in Primary Mathematics</td>
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<tr>
<td>A13</td>
<td>11:10am-12:10pm</td>
<td>1 to 7</td>
<td>Calculating Card Conundrums: Using Playing Cards to Develop All Four Proficiencies</td>
</tr>
<tr>
<td>A14</td>
<td>11:10am-12:10pm</td>
<td>1 to 8</td>
<td>Fostering Mathematical Understanding Through Virtual and Concrete Manipulatives</td>
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<tr>
<td>A15</td>
<td>11:10am-12:10pm</td>
<td>1 to 10</td>
<td>Building Family School Partnerships with Maths and Robotics</td>
</tr>
<tr>
<td>A16</td>
<td>11:10am-12:10pm</td>
<td>2 to 6</td>
<td>Place Value Assessment and Teaching in Year 2-6</td>
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<tr>
<td>A17</td>
<td>11:10am-12:10pm</td>
<td>3 to 5</td>
<td>Teachers 4 Teachers Maths Box Orange</td>
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<tr>
<td>A18</td>
<td>11:10am-12:10pm</td>
<td>3 to 8</td>
<td>Teaching Mathematics Developmentally</td>
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<tr>
<td>A19</td>
<td>11:10am-12:10pm</td>
<td>3 to 9</td>
<td>Mathematically Rich Tasks to Develop Engagement, Thinking, Reasoning and Understanding</td>
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<tr>
<td>A20</td>
<td>11:10am-12:10pm</td>
<td>3 to 10</td>
<td>Interactive Diagrams to Assist Mathematical Understanding</td>
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<tr>
<td>A21</td>
<td>11:10am-12:10pm</td>
<td>4 to 7</td>
<td>An Interactive Workshop Presenting Exciting Decimal Measurement Tasks to Enhance Student Thinking</td>
</tr>
<tr>
<td>A22</td>
<td>11:10am-12:10pm</td>
<td>4 to 8</td>
<td>Integrating Learning Theories When Designing, Implementing and Evaluating Rich Mathematical Tasks</td>
</tr>
<tr>
<td>A23</td>
<td>11:10am-12:10pm</td>
<td>4 to 9</td>
<td>Using Whole Numbers and Number Lines to Develop Fraction Understanding</td>
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<tr>
<td>A24</td>
<td>11:10am-12:10pm</td>
<td>5 to 8</td>
<td>Problem Solving</td>
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<tr>
<td>A25</td>
<td>11:10am-12:10pm</td>
<td>5 to 8</td>
<td>The Earth is a Sundial</td>
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<tr>
<td>A26</td>
<td>11:10am-12:10pm</td>
<td>5 to 9</td>
<td>Algebra as Story Telling</td>
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<tr>
<td>A27</td>
<td>11:10am-12:10pm</td>
<td>5 to 9</td>
<td>A Formula for Maths Lessons</td>
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<tr>
<td>A28</td>
<td>11:10am-12:10pm</td>
<td>5 to 9</td>
<td>Tools for Planning and Assessment</td>
</tr>
<tr>
<td>A29</td>
<td>11:10am-12:10pm</td>
<td>5 to 12</td>
<td>Hanlon’s Handy Hints!</td>
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<tr>
<td>A30</td>
<td>11:10am-12:10pm</td>
<td>6 to 12</td>
<td>Animating Statistics Through Physical Activity and Simple Measures</td>
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<tr>
<td>A31</td>
<td>11:10am-12:10pm</td>
<td>7 to 9</td>
<td>Algebra - Try Something Different</td>
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<tr>
<td>A32</td>
<td>11:10am-12:10pm</td>
<td>7 to 10</td>
<td>5 Minute Activities for the Middle School Classroom</td>
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<tr>
<td>A33</td>
<td>11:10am-12:10pm</td>
<td>7 to 10</td>
<td>Infusion of Games Based Learning with Food: An Innovation in Mathematics Education</td>
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<tr>
<td>A34</td>
<td>11:10am-12:10pm</td>
<td>7 to 10</td>
<td>Harnessing Aboriginal and Torres Strait Islander Data</td>
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<tr>
<td>A35</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>An Overview of Mathematica and Wolfram</td>
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<tr>
<td>A36</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>I Cancelled All Maths Classes!</td>
</tr>
<tr>
<td>A37</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>A Prime Time with Mathematica</td>
</tr>
<tr>
<td>A38</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>Flipping Out - Screencasting to Reclam Precious Lesson Time and Extend Your Learners</td>
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<tr>
<td>A39</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>Constructing Animated Proofs Using Dynamic Geometry Software</td>
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<tr>
<td>A40</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>Modelling the World with Mathematica</td>
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<tr>
<td>A41</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>The Mathematics of June 16: Perspectives from Learners in South African Schools</td>
</tr>
<tr>
<td>A42</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>Mathematica: An Introduction to Some Secondary (All Levels) Classroom Activities</td>
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<tr>
<td>A43</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>Career Development as the Business of Maths</td>
</tr>
<tr>
<td>A44</td>
<td>11:10am-12:10pm</td>
<td>7 to 12</td>
<td>The Barometer Question</td>
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A45 7 to 12 Teaching with Your iPad - Freda Goddard, Ian Taylor
A46 8 to 12 Never Used a ClassPad II and Need to Know How? - Anthony Harradine
A47 9 to 12 Will the MOOC's Tsunami Engulf Secondary Mathematics Education? - Dr Brenton Groves
A48 10 to 12 Fractals and Logs in Nature - Michael Chapman
A49 10 to 12 Analysis Tasks for VCE Mathematics 2014 and Beyond - Allason McNamara, Dr Philip Swedosh, Dean Lamson
A50 10 to 12 On Developing Problem Solving Strategies - Hussein Tahir
A51 11 to 12 School-Assessed Coursework - Insights and Examples from Queensland Senior Mathematics - Maggi Gunn, Jacqui Klowss
A52 11 to 12 Modules and Videos for the Senior Curriculum - Dr Michael Evans

SESSION A-B: 11:10am-1:30pm Thursday 5th December
A-B1 P to 8 A3 Maths Mat - Rob Proffitt-White
A-B2 2 to 7 Learning Through Games - Peggy Ashton, Jennifer Vincent
A-B3 3 to 8 Making Mathematics Visual: The Model Method to Enhance Problem Solving Skills and Foster Pre-Algebraic Thinking - Yueh Mei Liu, Vei Li Soo
A-B4 3 to 8 Games in the 4-8+ Maths Classroom - Richard Korbosky
A-B5 3 to 10 Making Maths Irresistible… - Michelle Button, Mohit Midha
A-B6 5 to 12 Creating Powerful Tools for Learning: Lua for Everyone - Dr Stephen Arnold
A-B7 7 to 10 Using 'Algebra Tiles' to Teach Integers, Expansion and Factorisation - Michael O'Reilly, Norrian Rundle
A-B8 7 to 12 Reflective Practices - Peter Fox, Russell Brown
A-B9 7 to 12 So This Will Be/Has Been Your First Year of Teaching Mathematics - Rob Vermay
A-B10 10 to 12 Enrich Student Learning with TI-Nspire PublishView - Neale Woods
A-B11 11 to 12 A Framework for Developing a Further Mathematics Data Analysis SAC - Peter Jones
A-B12 11 to 12 Inspired Interactive Graphs and Simulations - Frank Moya

SESSION B: 12:30pm-1:30pm Thursday 5th December
B1 4 to 8 Thanks for the iPads, But What are we Supposed to do with Them? Using Technology in Primary Mathematics Classrooms - Dr Catherine Attard
B2 K to 6 Playing Cards - Douglas Williams
B3 F to 3 Creating a Challenging Measurement Curriculum in the Early Years - Dr Jill Cheeseman, Dr Andrea McDonough
B4 F to 6 Effective Teaching and Learning Using iPads - Jennifer Bowden, Ellen Corovic
B5 F to 6 Planning Units of Work to Develop Conceptual Understanding - Nancy Surace, Mark Mudge
B6 F to 6 Teach Maths for Understanding F-6 - Dr Ian Lowe
B7 F to 10 Evernote: Tracking Student Performance - Chris Sacco, Lauren Marriott, Michael Portaro
B8 F to 10 AusVELS Numeracy Assessment Made Easy - Essential Numeracy Assessment - Andrew Spitty
B9 F to 12 Enabling Rubrics to Reveal What Would Otherwise Remain Unknown - Alexander (Alec) Young
B10 F to 12 Mathletics: Integrating the Resources - Lauren Anderson
B11 1 to 4 Musical Algebra - Kim Bulluss, Anuja Singh
B12 3 to 8 Teaching Mathematics Developmentally - Bruce Williams
B13 4 to 6 Student Led Workshops - Dena Reddan, Rick Hynes, Luke Hindson
B14 4 to 7 An Interactive Workshop Presenting Exciting Decimal Measurement Tasks to Enhance Student Thinking - Linda Cheeseman, Bina Kachwalla
B15 4 to 8 What Secondary Teachers Would Like Primary Teachers to Know - Helen King
B16 4 to 9 Geometry in Art and Design: Escher, the MATHOMAT and the Australian Curriculum - Assoc Prof Susie Groves
B17 4 to 10 Cooperation in Problem Solving Between Primary and Secondary School Teachers - Dr Anne Prescott, Julie Dupuche
B18 5 to 7 Adding to Conceptual Understanding of Some Number Topics Using Technology - Carol Moule
B19 5 to 8 Problem Solving - Daniel Avano, Simon Kelly
B20 5 to 8 Using Extension Materials to Underpin Better Learning - Ian Bull
B21 5 to 9 Algebra as Story Telling - Adj Prof Mike Clapper
B22 5 to 9 A Formula for Maths Lessons - Meredith Clegg, Justine Johnston, Lisa McLeish
B23 5 to 9 Tools for Planning and Assessment - Using the Numeracy Improvement Strategy Approach - Koreena Carlton, Nick Keating, Sara Mcke, Erin Cole

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B24  5 to 10  Bring Maths & Science Together - Rhonda Lyons
B25  5 to 10  The ABC of Mathematics. Who Needs a Maths Dictionary? - Gael McLeod, Sophie Matta
B26  6 to 9  Down to Earth with Deadly Maths - Jan Cavanagh
B27  6 to 12  Animating Statistics Through Physical Activity and Simple Measures - Colin Chapman
B28  7 to 10  Enrichment Activities for High Performing Students - Debra Brooks, Donna Callow
B29  7 to 10  Thinking, Creating and Understanding - Prof Derek Holton
B30  7 to 10  Solving Non-Routine Mathematical Problems with Two Unknowns - Karim Noura
B31  7 to 10  Introducing Maths Concepts Into Game Maker - Nathaniel Bradshaw
B32  7 to 10  5 Minute Activities for the Middle School Classroom - Kim Streek, Allesha Fecondo
B33  7 to 10  assessON: Assign, Monitor and Track Student Progress with Ease - Evan Curnow, Shirley Sharphey
B34  7 to 11  If Size Doesn’t Matter, Context Definitely Does - Alexandria Dowson
B35  7 to 12  Modelling the World with Mathematica - Brian Hodgson
B36  7 to 12  Using Mathematica and CDFs - A Basic Approach - Gary Bass
B37  7 to 12  Pythagoras Flirts with Lumeracy and Technology in the Aegean Sea - Rama Ramakrishnan
B38  7 to 12  Mathematics of Oceans - Waves Sharks and Ships - Paul Pascoe
B39  7 to 12  Why Cubic Polynomial Functions? - Dr David Leigh-Lancaster, Antje Leigh-Lancaster
B40  7 to 12  A Community Engagement Approach to Improving Learners’ Access to Mathematical Sciences In South Africa - Asaph Nkomo, Prof Willy Mwakapenda, Williams Ndlovu
B41  7 to 12  Overcrowding, Vampires and Other Population Problems - Marty Ross
B42  9 to 12  TI-Nspire for Mathematical Methods - Sanjeev Meston
B43  10 to 12  Analysis Tasks for VCE Mathematics 2014 and Beyond - Allason McNamara, Dr Philip Swedosh, Dean Lamson
B44  10 to 12  Assessment Tasks in Senior Mathematics Using the colour Casio ClassPad - Maria Schaffner, Cathy Devlyn
B45  11 to 12  Modules and Videos for the Senior Curriculum - Dr Michael Evans
B46  11 to 12  Four Interesting and Useful Theorems About Polynomials - John Kermond
B47  11 to 12  General Continuous Random Variables - Stephen Swift
B48  11 to 12  VCE Maths and the Virtual Learning Network - Kyle Staggard, Stuart Payne
B49  11 to 12  Activities for VCE Maths Methods 1-4 - Christine Boyer

SESSION C:  2:30pm-3:30pm Thursday 5th December
CK1  F to 12  Teaching in a Veterinary Science Program - Turning Out Problem Solvers - Dr Helen Keates
CK2  3 to 12  Maths Anxiety: Is it Holding Education Back? - Prof Marnie Hughes-Warrington
C3  3 to 4  Addition and Subtraction Problem Types - Robyn Stephens
C4  3 to 6  Making Links Through Proficiency Strands - Greg Butler, Fiona Lindsay, Leanne Cummings
C5  3 to 6  A Journey with Professional Learning Communities - Bev Thompson, Laurel Smith
C6  3 to 12  MAV Maths Talent Quest (MTQ) - Mathematics Investigation Projects - June Penney, Kelly Gallivan
C7  3 to 12  Introducing the HP Prime Graphing Calculator - Dr Chris Longhurst
C8  1 to 3  Incorporating Drama in Maths Lessons - Siu Marn Lee, Lee Choon Nga
C9  1 to 6  A Bucket of Maths - Water by the Numbers - Heath Graham, Marilyn Snider
C10  1 to 10  Measuring Progress in School Improvement with the Progressive Achievement Tests Maths (PATMaths) - Julia Inglis
C11  2 to 7  Being Mathematicians: Teaching and Learning Through Problem Solving and Reasoning - Rhys Coulson, Robert Smart
C12  2 to 8  Language in Mathematics Learning - Em Prof Philip Clarkson
C13  3 to 6  Using the Real World to Engage Our Students - Stephen Cox, Anna Kapnoullas, Liza Dearing, Natalie Edwards
C14  3 to 8  Teaching Fractions Developmentally - Bruce Williams
C15  3 to 8  The Reasoning Proficiency - Lorraine Day, Derek Hurrell
C16  3 to 8  Exploring 3-D Geometry from Scratch - Dr Brian Doig
C17  4 to 8  Mathematical Opportunities - Sharyn Livy, Dr Tracey Muir
C18  5 to 6  Insights Into The Problem Solving Procedures - Wong Oon Hua, Chai Gek Mui
C19  5 to 8  Using Extension Materials to Underpin Better Learning - Ian Bull
C20  5 to 8  Linking the Australasian Problem Solving Mathematical Olympiads and the Australian Curriculum Proficiencies - Dr Anne Prescott, Jon Phegan
C21  5 to 10  Analysing Students’ Result Through Conditional Formatting Using Excel for Early to Middle Years Mathematics - Iqbal Hossain, Rudy Birsu
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<td>C22</td>
<td>5 to 12</td>
<td>How We Tripled Student Mathematics Growth Through Effective Use of Student Data - <em>Lachlan Yeates, Sara Graf</em></td>
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<td>C23</td>
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<td>Promoting Mathematics Learning and Teaching Through Employing Forensic Science (Ear Printing) as a PBL Device - <em>Dr Ahmad Samarji</em></td>
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<td>C24</td>
<td>6 to 8</td>
<td>Fun With Plane Shapes and Paper Folding - <em>Darren Brett</em></td>
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<td>C25</td>
<td>6 to 12</td>
<td>Arithmetika is Now on the Web - <em>Tony Allan</em></td>
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<td>C26</td>
<td>7 to 10</td>
<td>ABS Products Supporting Deeper Statistical Understanding: Entry Points to the Australian Curriculum - <em>Vivienne McQuade</em></td>
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<td>C27</td>
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<td>Consumer Classroom - Developing Practical Numeracy Skills Through Consumer Education - <em>Roslyn Mullins</em></td>
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<td>C28</td>
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<td>What's an English Teacher Doing in a Mathematics Classroom? - <em>Dr Ray Williams</em></td>
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<td>C29</td>
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<td>From Geometry to Algebra with Polygons - <em>Andrea Van Graan</em></td>
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<td>7 to 10</td>
<td>Autograph for Year 7-10 (Laptops and Mobiles) - <em>Douglas Butler</em></td>
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<td>Constructing Animated Proofs Using Dynamic Geometry Software - <em>Dr Wee Leng Ng</em></td>
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<td>Positive Education in the Mathematics Classroom - <em>Stephen Andrew</em></td>
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<td>C33</td>
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<td>Engaging Learners Through Mini Whiteboards - <em>Peter Mein, Tracey Blunden</em></td>
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<td>C34</td>
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<td>Multiple Representations: Using Egyptian Fractions as an Extended Activity - <em>Dennis Fitzgerald, Phillip Knight</em></td>
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<td>C35</td>
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<td>South African Learners' Participation in Mathematical Sciences: Global Players or Local Observers? - <em>Williams Ndlovu, Prof Willy Mwakapenda, Asaph Nkomo</em></td>
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<tr>
<td>C36</td>
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<td>The Maths of Planet Mars - <em>Marty Ross</em></td>
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<td>C37</td>
<td>8 to 10</td>
<td>Learning Experiences with Quadratic Function and Curve - <em>Yew Fook Chan</em></td>
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<td>C38</td>
<td>8 to 12</td>
<td>One School's Approach to Improving Student Results on Extended Response Questions and Worded Problems - <em>Samantha Horrocks, Angela Callea</em></td>
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<td>C39</td>
<td>9 to 10</td>
<td>Biggest Loser - Gambling - <em>Robert Money, Donald Smith</em></td>
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<td>C40</td>
<td>9 to 12</td>
<td>Using ABS CensussAtSchool Database for Teaching Statistics on the TI-Nspire - <em>Russell Brown</em></td>
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<tr>
<td>C41</td>
<td>9 to 12</td>
<td>Pascal's Triangle and the Binomial Theorem - <em>Geoffrey Menon</em></td>
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<tr>
<td>C42</td>
<td>10 to 12</td>
<td>Further Maths Examinations This Year: How Was the CAS Calculator Useful? - <em>Kevin McMenamin</em></td>
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<tr>
<td>C43</td>
<td>10 to 12</td>
<td>Creating and Using eActivities in the Upper School - <em>Charlie Watson</em></td>
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<tr>
<td>C44</td>
<td>10 to 12</td>
<td>Demonstration of Maritime Engineering Maths in Schools Microsite for Teachers and Students - <em>Dr Wald Amin</em></td>
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<tr>
<td>C45</td>
<td>10 to 12</td>
<td>Furthering Use of Mathematica as a CAS Tool - <em>Brian Hodgson</em></td>
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<tr>
<td>C46</td>
<td>11 to 12</td>
<td>Interactive Diagrams to Assist Mathematical Understanding - <em>Dr lan Lowe</em></td>
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<td>C47</td>
<td>11 to 12</td>
<td>Quadratics, Straight Lines, Cubics, Tangents and Areas - <em>Raymond Rozen, Shirly Griffith</em></td>
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<td>C48</td>
<td>11 to 12</td>
<td>Introduction to Computer Aided Assessment of Secondary School Mathematics Using MapleTA - <em>Prof Bill Blyth, Dr Asim Ghous</em></td>
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<tr>
<td>C49</td>
<td>12 to 12</td>
<td>Computer Generating Random Maths Worksheets with the Entire Correct Notation - <em>Robert Rook</em></td>
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**SESSION C-D:**

**2:30pm-4:50pm Thursday 5th December**

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<td>C-D1</td>
<td>K to 6</td>
<td>Nine &amp; Over: Adventures in Place Value - <em>Douglas Williams</em></td>
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<td>C-D2</td>
<td>1 to 3</td>
<td>Why do I Need to be SunSmart? - <em>Kate Flack, Tony Flack</em></td>
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<td>C-D3</td>
<td>3 to 10</td>
<td>Using Excel to Create Statistical Displays - <em>Mary-Anne Aram</em></td>
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<td>C-D4</td>
<td>5 to 12</td>
<td>New Technologies, New Representations, New Opportunities: iPad Maths - <em>Dr Stephen Arnold</em></td>
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<tr>
<td>C-D5</td>
<td>7 to 11 + 12 (VCAL)</td>
<td>Encouraging Disengaged Mathematics Learners: The EMPower Program from Years 7 to 11 - <em>John Lawton, Richard Korbosky, Kellie Knoblauch, Gala Ferrari</em></td>
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<tr>
<td>C-D6</td>
<td>7 to 12</td>
<td>Hands-On Workshop for Mathematica Beginners - <em>Craig Bauling</em></td>
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**SESSION D:**

**3:50pm-4:50pm Thursday 5th December**

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<tr>
<td>DK1</td>
<td>F to 12</td>
<td>The Australian Mathematics Curriculum is a Disaster - <em>Marty Ross</em></td>
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<tr>
<td>D2</td>
<td>F to 4</td>
<td>Addition and Subtraction Problem Types - <em>Robyn Stephens</em></td>
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<tr>
<td>D3</td>
<td>F to 6</td>
<td>Making Links Through Proficiency Strands - <em>Greg Butler, Fiona Lindsay, Leanne Cummings</em></td>
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<tr>
<td>D4</td>
<td>F to 8</td>
<td>If Pattern Blocks Were Metric... - <em>Rod Cameron</em></td>
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<td>D5</td>
<td>F to 9</td>
<td>Lesson Study in the Melton Network: How it Worked For Us - <em>Assoc Prof Susie Groves, Dr Brian Doig, Dr Wanty Widjaja, David Garner, Kathy Palmer</em></td>
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<td>D6</td>
<td>F to 9</td>
<td>Mathematics Knowledge for Teaching - <em>Sue Ferguson</em></td>
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D7  F to 12  MAV Maths Talent Quest (MTQ) - Mathematics Investigation Projects - June Penney, Kelly Gallivan

D8  F to 12  Lock Down Numeracy - Benji Gersh

D9  F to 12  Planet Earth: Global Issues - Dr Ian Lowe

D10 1 to 6  A Bucket of Maths - Water by The Numbers - Heath Graham, Marilyn Snider

D11 2 to 7  Bar Model Method for Primary Mathematics - Dr Ban Har Yeap

D12 2 to 7  Being Mathematicians: Teaching and Learning Through Problem Solving and Reasoning - Rhys Coulson, Robert Smart

D13 3 to 6  Using the Real World to Engage Our Students - Stephen Cox, Anna Kapnoullas, Liza Dearing, Natalie Edwards

D14 3 to 8  Teaching Fractions Developmentally - Bruce Williams

D15 3 to 8  An Approach to Multi-Step Word Problems - Assoc Prof Marj Horne

D16 4 to 8  Integrating Learning Theories When Designing, Implementing and Evaluating Rich Mathematical Tasks - Dr Craig Deed, Stephen Cadusch, Scott Dealy, Chelsea Harrington

D17 4 to 8  Mathematical Opportunities - Sharyn Livy, Dr Tracey Muir

D18 5 to 6  Insights Into The Problem Solving Procedures - Wong Oon Hua, Chai Gek Mui

D19 5 to 8  Linking the Australasian Problem Solving Mathematical Olympiads and the Australian Curriculum Proficiencies - Dr Anne Prescott, Jon Phegan

D20 5 to 8  Techniques that Foster Persistence with Challenging Tasks - Dr Jill Cheeseman

D21 5 to 10  Obstacles to Successful Teaching - Helen King

D22 5 to 11  Spreadsheets - The Ultimate Maths Tool - Glenn Sullivan

D23 5 to 12  How We Tripled Student Mathematics Growth Through Effective Use of Student Data - Lachlan Yeates, Sara Graf

D24 5 to 12  Scoring Mathematics Papers - Prof John Barnard

D25 6 to 8  Being Positive About Negative Numbers - Dr Wendy Taylor

D26 7 to 8  Number Fluency Assessments from a Secondary Perspective - Robert Steer, Axanthe Knott

D27 7 to 10  Enrichment Activities for High Performing Students - Debra Brooks, Donna Callow

D28 7 to 10  Investigating How Journal Writing Improves Students’ Problem Solving Skills and Strategies - Oguzhan Yilmaz

D29 7 to 10  assessON: Assign, Monitor and Track Student Progress with Ease - Evan Curnow, Shirley Sharpley

D30 7 to 11  Mathspace - Personalised Textbook, Workbook and Markbook on Your iPad - Mohamad Jebara, Erin Gallagher

D31 7 to 12  The Australian Curriculum and Mathematica - Carmen Popescu-Rose, Karen Reid

D32 7 to 12  The Pedagogical Advantages of the Wireless Networked Classroom - Dr Ray Williams

D33 7 to 12  Photographic Evidence and Mathematical Science Education: A South African Perspective - Asaph Nkomo, Prof Willy Mwakapenda, Williams Ndlovu

D34 7 to 12  Using iPads in Mathematics Teaching - Dennis Fitzgerald, Phillip Knight

D35 8 to 10  Resourcing Financial Literacy in Middle School - Anne Nunan

D36 8 to 12  Never Used a ClassPad II and Need to Know How? - Anthony Harradine

D37 8 to 12  Mathematica - The Classroom Utilities Package - John Fitzherbert

D38 9 to 12  Biggest Loser - Gambling - Robert Money

D39 9 to 12  Pascal’s Triangle and the Binomial Theorem - Geoffrey Menon

D40 9 to 12  When Maths and Physics Collide Using the iPad - Brendan Herron, Chris Bracken

D41 10 to 12  Worthwhile CAS Calculator Use in this Year’s 2nd Methods Exam? - Kevin McMenamin

D42 10 to 12  Team Teaching Senior Mathematics - Can it Work? - Ewan Campbell, Rebecca Cooper

D43 10 to 12  Real Data for Unit 3-4 Further Mathematics and Other Year Levels - Dana Frantz, Giovanni Liubicich

D44 10 to 12  Bouncing Into Mathematics - Peter Fox

D45 11 to 12  Programming TI-Nspire for Fully Automated Solutions of Mathematical Methods CAS Exam 2 Questions - Mehmet Altundal

D46 11 to 12  Role of Parameters in Mathematics Teaching - Yuriy Verkhatsky

D47 11 to 12  Autograph for Year 11-12 (Laptops and Mobiles) - Douglas Butler

D48 12 to 12  Computer Generating Random Maths Worksheets with the Entire Correct Notation - Robert Rook
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**SESSION E:** 9:00am-10:00am Friday 6th December

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<td>The Future of Maths is in Your Hands - Embrace IT!</td>
<td>Narissa Leung, Anthony Speranza</td>
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<td>EK2</td>
<td>Creative Approaches to Skills and Drills</td>
<td>Jennifer Palisse</td>
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<td>E3</td>
<td>More Reasons to Include Reasoning in Your Lessons</td>
<td>Dr Leicha Bragg, Assoc Prof Colleen Vale, Dr Sandra Herbert, Dr Esther Loong, Dr Wanty Widjaja, Dr Gaye Williams, Assoc Prof Judy Mousley</td>
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<td>E4</td>
<td>Spatial Concepts and Reasoning are Vital in Fully Understanding Planet Earth</td>
<td>Pamela Hammond</td>
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<td>E5</td>
<td>Introducing the Birth to Year 10 Mathematics Continuum</td>
<td>Helen Gist, Denise Jacobsson</td>
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<td>E6</td>
<td>AusVELS Numeracy Assessment Made Easy</td>
<td>Andrew Spitty</td>
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<td>E7</td>
<td>Keeping it Real: Kids as Virtual Coaches making sense of Real Life Maths (1:1 friendly)</td>
<td>Phill Cristofaro</td>
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<td>E8</td>
<td>Connect with Maths, Your New Online Community</td>
<td>Renee Hoareau</td>
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<td>E9</td>
<td>Mathletics Assessment and Reporting</td>
<td>Andrew Nicholls</td>
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<td>E10</td>
<td>Enabling Rubrics to Reveal What Would Otherwise Remain Unknown</td>
<td>Alexander (Alec) Young</td>
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<td>E11</td>
<td>Place Value Assessment and Teaching in Year 2-6</td>
<td>Angela Rogers</td>
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<td>E12</td>
<td>Geometry Through the Art of Paper Folding</td>
<td>Averil Lee</td>
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<td>E13</td>
<td>Maths with Attitude: An Alternative to Text-Based Learning</td>
<td>Douglas Williams</td>
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<td>E14</td>
<td>Getting the Most Out of Cambridge HOTmaths</td>
<td>VJ Gunawardana, Victoria Cook</td>
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<td>E15</td>
<td>Worksheet Wonder - Make Your Mathematics Worksheets Electronic and Interactive</td>
<td>Bill Healy</td>
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<td>E16</td>
<td>A Priming Intervention to Improve Grade 4 Students' Mathematical Competency and Self Efficacy</td>
<td>Diane Itter, Melissa Sellick, Lucy Lang, Lauren Williams</td>
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<td>E17</td>
<td>Problem Solving Strategies Through the Lens of the Australian Curriculum 4-7</td>
<td>Richard Korbosky</td>
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<td>E18</td>
<td>Using Whole Numbers and Number Lines to Develop Fraction Understanding</td>
<td>Dr Catherine Pearn, Dr Max Stephens</td>
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<td>E19</td>
<td>Adding to Conceptual Understanding of Some Number Topics Using Technology</td>
<td>Carol Moule</td>
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<td>E20</td>
<td>Analysing Students’ Result Through Conditional Formatting Using Excel for Early to Middle Years Mathematics</td>
<td>Iqbal Hossain, Rudy Birsa</td>
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<td>E21</td>
<td>Removing the Classroom Lock Step: Maths Pathway</td>
<td>Justin Matthys, Richard Wilson</td>
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<td>E22</td>
<td>Spreadsheets - The Ultimate Maths Tool</td>
<td>Glenn Sullivan</td>
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<td>E23</td>
<td>Simple Changes Leading to Big Class Outcomes: A Better Form of Feedback</td>
<td>Anthony Fowler, Kate Mongan</td>
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<td>E24</td>
<td>Fun With Plane Shapes and Paper Folding</td>
<td>Darren Brett</td>
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<td>E25</td>
<td>Algebra - Try Something Different</td>
<td>Paul Dann, Jane Kahle</td>
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<td>E26</td>
<td>Introducing ‘Algebra’ (Algebraic Literacy) – Making Meaning of Symbolic Representations</td>
<td>Alastair Lupton</td>
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<td>E27</td>
<td>Thinking, Creating and Understanding</td>
<td>Prof Derek Holton</td>
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<td>E28</td>
<td>Solving Non-Routine Mathematical Problems with Two Unknowns</td>
<td>Karim Noura</td>
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<td>E29</td>
<td>ABS Products Supporting Deeper Statistical Understanding: Entry Points to the Australian Curriculum</td>
<td>Vivienne McQuade</td>
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<td>E30</td>
<td>How We Differentiate Our Classroom with the Use of Data And Technology</td>
<td>Zoe Christie, Brad Foss</td>
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<td>E31</td>
<td>World Data + Mathematica = Australian Curriculum</td>
<td>Brian Hodgson, Elizabeth Burns</td>
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<td>E32</td>
<td>Deepening Students Understanding of Data Using Tinkerplots Dynamic Data Exploration</td>
<td>John Lawton, Dr Ian Lowe</td>
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<td>E33</td>
<td>Teaching Logic in Math Teaching</td>
<td>Yuriy Verkhatsky</td>
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<td>E34</td>
<td>Mathspace - Personalised Textbook, Workbook and Markbook on Your iPad</td>
<td>Mohamad Jebara, Erin Gallagher</td>
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<td>E35</td>
<td>Hints for Young Players</td>
<td>Peter Collins</td>
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<td>E36</td>
<td>Effective Mathematics Teaching and Learning in the 1:1 Classroom</td>
<td>Marcel Van Otterdyk</td>
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<td>Using iPads in Mathematics Teaching</td>
<td>Dennis Fitzgerald, Phillip Knight</td>
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<td>E38</td>
<td>Calculation - When To, When Not To And How!</td>
<td>Anthony Harradine</td>
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<td>E39</td>
<td>Ti-Nspire for Mathematical Methods</td>
<td>Sanjeev Meston</td>
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<td>E40</td>
<td>When Maths and Physics Collide Using the iPad</td>
<td>Brendan Herron, Chris Bracken</td>
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<td>A Graph Colouring Book - Dr Peter Van der Kamp, Dr Tomasz Kowalski</td>
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<td>E42</td>
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<td>Creating and Using eActivities in the Upper School - Charlie Watson</td>
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<td>E43</td>
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<td>Further Maths Examinations This Year: How Was the CAS Calculator Useful? - Kevin McMenamin</td>
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<td>School-Assessed Coursework - Insights and Examples from Queensland Senior Mathematics - Maggi Gunn, Jacqui Klowss</td>
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<td>E45</td>
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<td>Transformations in the Plane - Stephen Swift</td>
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<td>E46</td>
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<td>Maximization Using Maple: Polya Approach with Multiple Representation - With or Without Calculus - Prof Bill Blyth, Dr Asim Ghous</td>
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**SESSION F:** 10:45am-11:45am Friday 6th December

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<td>The Most Recent AHA! in My Mathematical Journey - Dr Calvin Irons</td>
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<td>FK2</td>
<td>5 to 12</td>
<td>E=mc² : Breaking Apart the World’s Most Famous Equation - Dr Tanya Hill</td>
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<td>F3</td>
<td>F to 6</td>
<td>Effective Teaching and Learning Using iPads - Jennifer Bowden, Ellen Corovic</td>
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<td>F4</td>
<td>F to 6</td>
<td>More Reasons to Include Reasoning in Your Lessons - Dr Leicha Bragg, Assoc Prof Colleen Vale, Dr Sandra Herbert, Dr Esther Loong, Dr Wanty Widjaja, Dr Gaye Williams, Assoc Prof Judy Mousley</td>
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<td>F5</td>
<td>F to 6</td>
<td>Spatial Concepts and Reasoning are Vital in Fully Understanding Planet Earth - Pamela Hammond</td>
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<td>F6</td>
<td>F to 8</td>
<td>If Pattern Blocks Were Metric... - Rod Cameron</td>
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<td>F7</td>
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<td>Accountable Learning - Michael Portaro, Christopher Kellett</td>
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<td>F8</td>
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<td>Lock Down Numeracy - Benji Gersh</td>
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<td>F9</td>
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<td>Revealing Quality Teaching - Alexander (Alec) Young</td>
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<td>Mathletics: Integrating the Resources - Lauren Anderson</td>
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<td>F11</td>
<td>1 to 3</td>
<td>Incorporating Drama in Maths Lessons - Siu Mam Lee, Lee Choon Nga</td>
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<td>F12</td>
<td>2 to 6</td>
<td>iPads as a Learning Tool - Fiorella Soci, Natalie Erwin</td>
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<td>F13</td>
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<td>What is in Your Top Drawer? - Kate Manuel</td>
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<td>Geometry Through the Art of Paper Folding - Averil Lee</td>
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<td>F15</td>
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<td>An Approach to Multi-Step Word Problems - Assoc Prof Marj Horne</td>
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<td>F16</td>
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<td>Getting the Most Out of Cambridge HOTmaths - VJ Gunawardana, Victoria Cook</td>
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<td>F17</td>
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<td>Spy Class: Engage Mathematics Students Through Narrative and Gaming - Ron Barassi, Luke Jackson</td>
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<td>Worksheet Wonder - Make Your Mathematics Worksheets Electronic and Interactive - Bill Healy</td>
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<td>Measurement and Technology - Using Data Loggers - Daniel Avano, Simon Keily</td>
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<td>F20</td>
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<td>Speedy Maths - A Lesson in Fluency - Thao Huynh, Victor Vu, Tim Purcell</td>
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<td>F21</td>
<td>5 to 9</td>
<td>Tips and Tricks for Having Your Students Feeling They Are Maths Geniuses - Robert Rook</td>
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<td>F22</td>
<td>5 to 10</td>
<td>Implementing a Differenitiated Curriculum in Your Classroom - A Practical Solution - Jodie Parsons, Yvonne Reilly</td>
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<td>F23</td>
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<td>Effective Writing in Mathematics - Rodney Jones, Mark Ljubic</td>
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<td>F24</td>
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<td>Removing the Classroom Lock Step: Maths Pathway - Justin Matthys, Richard Wilson</td>
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<td>F25</td>
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<td>Promoting Mathematics Learning and Teaching Through Employing Forensic Science (Ear Printing) as a PBL Device - Ahmad Samarji</td>
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<td>F26</td>
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<td>Down to Earth with Deadly Maths - Jan Cavanagh</td>
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<td>Number Fluency Assessments from a Secondary Perspective - Robert Steer, Axanthe Knott</td>
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<td>F28</td>
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<td>Consumer Classroom - Developing Practical Numeracy Skills Through Consumer Education - Roslyn Mullins</td>
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<td>How We Differentiate Our Classroom with the Use of Data and Technology - Zoe Christie, Brad Foss</td>
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<td>F30</td>
<td>7 to 10</td>
<td>World Data + Mathematica = Australian Curriculum - Brian Hodgson, Elizabeth Burns</td>
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<td>F31</td>
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<td>Teach Maths for Understanding 7-10 - Dr Ian Lowe</td>
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<td>F32</td>
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<td>I Cancelled All Maths Classes! - Erin Gallagher</td>
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<td>Flipping Out - Screencasting to Reclaim Precious Lesson Time and Extend Your Learners - Neil Holden</td>
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<td>F34</td>
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<td>The Australian Curriculum and Mathematica - Carmen Popescu-Rose, Karen Reid</td>
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<td>Multiple Representations: Using Egyptian Fractions as an Extended Activity - Dennis Fitzgerald, Phillip Knight</td>
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<td>Hints for Young Players - Peter Collins</td>
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<td>Resourcing Financial Literacy in Middle School</td>
<td>Anne Nunan, Katrina Birch</td>
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<td>A Graph Colouring Book</td>
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<td>Michael Chapman</td>
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<td>Demonstration of Maritime Engineering Maths in Schools Microsite for Teachers and Students</td>
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<td>Worthwhile CAS Calculator Use in this Year’s 2nd Methods Exam?</td>
<td>Kevin McMenamin</td>
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<td>TI-Nspire CAS Notes Application - A Hidden Treasure</td>
<td>Neale Woods</td>
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<td>On Developing Problem Solving Strategies</td>
<td>Hussein Tahir</td>
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<td>How Do We Encourage Students to Get the Right Balance Between CAS and By-Hand in VCE Mathematics</td>
<td>Sue Garner, Natalie Draper</td>
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<td>F48</td>
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<td>Improving VCE Results</td>
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<td>Activities for VCE Maths Methods 1-4</td>
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<td>Autograph for Year 11-12 (Laptops and Mobiles)</td>
<td>Douglas Butler</td>
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<td>F51</td>
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<td>The Use of Mathematics in Actuarial Science</td>
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**SESSION F-G:** 10:45am-1:10pm Friday 6th December

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<td>Games in the F-3 Maths Classroom</td>
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<td>F-G4</td>
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<td>Why do I Need to be SunSmart?</td>
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<td>F-G5</td>
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<td>Yueh Mei Liu, Ve L Soo</td>
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<td>Using Excel to Create Statistical Displays</td>
<td>Mary-Anne Aram</td>
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<td>Michelle Button, Mohit Midha</td>
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<td>Michael O’Reilly, Norrian Rundle</td>
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<td>Hands-On Workshop for Mathematica Beginners</td>
<td>Craig Bauling</td>
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<td>F-G11</td>
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**SESSION G:** 12:10pm-1:10pm Friday 6th December

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<td>G3</td>
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<td>Differentiation in Planning</td>
<td>Julie Hall, Gary Monopoli</td>
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<td>G4</td>
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<td>POP Maths for the Primary School</td>
<td>Georgina Ferencz</td>
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<td>Mathematics Knowledge for Teaching</td>
<td>Sue Ferguson</td>
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<td>G6</td>
<td>F-10</td>
<td>Evernote: Tracking Student Performance</td>
<td>Chris Sacco, Lauren Marriott, Michael Portaro</td>
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<td>G7</td>
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<td>Introducing Cambridge HOTmaths</td>
<td>VJ Gunawardana, Victoria Cook</td>
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<td>G8</td>
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<td>Keeping it Real: Kids as Virtual Coaches making sense of Real Life Maths (1:1 friendly)</td>
<td>Phill Cristofaro</td>
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<td>Introducing the HP Prime Graphing Calculator</td>
<td>Dr Chris Longhurst</td>
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<td>Fiorella Soci, Natalie Erwin</td>
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<td>Once Upon a Time: Children’s Literature and Mathematics</td>
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<td>G17</td>
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<td>Chocolate, Ratio, % and Multiplicative Thinking!</td>
<td>Christine Lenghaus</td>
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<td>G18</td>
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<td>Tips and Tricks for Having Your Students Feeling They Are Maths Geniuses</td>
<td>Robert Rook</td>
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<td>G19</td>
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<td>Jodie Parsons, Yvonne Reilly</td>
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G20 5 to 10 Some Key Ideas in Teaching Statistics in the Primary and Middle School Years - Dr Max Stephens

G21 5 to 10 The ABC of Mathematics. Who Needs a Maths Dictionary? - Gael McLeod, Sophie Matta

G22 5 to 11 Simple Changes Leading to Big Class Outcomes: A Better Form of Feedback - Anthony Fowler, Kate Mongan

G23 5 to 12 Down To Earth Mathematics - Leigh Thompson, Luke Blythman

G24 6 to 12 Mathematical Marvels to Liven Up Lessons - Andrew Wrigley

G25 6 to 12 Using Mini-Whiteboards and Card Matching Puzzles to Challenge Students’ Mathematical Thinking - Samantha Horrocks

G26 6 to 12 The Joy of Informatics - Jan Honnens

G27 6 to 12 Arithmetika - The Ultimate Formative Assessment Solution - Tony Allan

G28 7 to 8 SpyClass: An Adventure in Game-Based Learning - Evan Cumow, Brent Ramsay

G29 7 to 10 What’s an English Teacher Doing in a Mathematics Classroom? - Dr Ray Williams

G30 7 to 10 Infusion of Games Based Learning with Food: An Innovation in Mathematics Education - Dr Philip Button, Dr John Lenarcic

G31 7 to 10 Autograph for Year 7-10 (Laptops and Mobiles) - Douglas Butler


G33 7 to 12 A Prime Time with Mathematica - Dr David Leigh-Lancaster, Antje Leigh-Lancaster

G34 7 to 12 Mathematica: An Introduction to Some Secondary (All Levels) Classroom Activities - Ian Wilson

G35 7 to 12 Career Development as the Business of Maths - Mary Harrington

G36 7 to 12 Using Mathematica and CDFs - A Basic Approach - Gary Bass

G37 7 to 12 Positive Education in the Mathematics Classroom - Stephen Andrew

G38 7 to 12 Going SOLO in Mathematics - Diane Farrell, Kimberley McGillivray

G39 8 to 10 Learning Experiences with Quadratic Function and Curve - Yew Fook Chan

G40 8 to 12 Mathematica - The Classroom Utilities Package - John Fitzherbert

G41 9 to 12 Will the MOOC’s Tsunami Engulf Secondary Mathematics Education? - Dr Brenton Groves

G42 9 to 12 Using STELR Science Resources for Applications of Mathematics - Dr Ian Lowe

G43 9 to 12 Strategies for Problem Solving - Assoc Prof Susie Groves

G44 10 to 12 Problem Solving With a ‘Leg Up’ From Technology - Kevin McMenamin

G45 10 to 12 Furthering Use of Mathematica as a CAS Tool - Brian Hodgson

G46 10 to 12 Working in the Classroom with the New ClassPad fx-CP400 CAS Calculator - Charlie Watson

G47 10 to 12 Graphing Gallery with the TI-Nspire CAS Calculator - Shane Dempsey, Peta Taylor

G48 11 to 12 Four Interesting and Useful Theorems about Polynomials - John Kermond

G49 11 to 12 Planning and Assessing SACs in VCE General/Further Mathematics - Sandra Wright, Ronda Hazell

G50 11 to 12 Introduction to Computer Aided Assessment of Secondary School Mathematics Using MapleTA - Prof Bill Blyth, Dr Asim Ghous

G51 11 to 12 The Use of Mathematics in Actuarial Science - Dr Colin O’Hare

SESSION H: 2:10pm-3:10pm Friday 6th December

HK1  F to 12 The Future for Mathematics Education in Australian Schools - Dr Mary Coupland, Allison McNamara

H2  Pre-K to F Authentic, Play Based Maths in the Early Years - Caroline Barnett, Liz Kennedy, Ramila Sadieken

H3  F to 3 Problem Solving Strategies Through the Lens of the Australian Curriculum - Richard Korborsy

H4  F to 6 Differentiation in Planning - Julie Hall, Gary Monopoli

H5  F to 6 The Big Ideas in Number: 1 Small Step for a School, 1 Giant Leap in Mathematical Reform - Amanda McLean, Margaret Dolan, Robyn Trzeckiak

H6  F to 10 Introducing Cambridge HOTmaths - VJ Gunawardana, Victoria Cook

H7  F to 12 Maths in Malawi - Dr Ian Lowe

H8  1 to 10 Building Family School Partnerships with Maths and Robotics - Nathaniel Bradshaw

H9  1 to 12 Maths Partnerships Really Count - Dr Gill Lunniss, Kate Maiden

H10 2 to 10 Beyond the Tip of the Iceberg - Douglas Williams

H11 2 to 4 Mental Computation and Number. Using Games to Effectively Teach Number Facts and Build Numeracy Skills - Linda Baron
Session Summary

H12  3 to 5  Teachers 4 Teachers Maths Box Orange - Debbie Reinholtd, Sarah Peterson
H13  3 to 6  Once Upon a Time: Children’s Literature and Mathematics - Dr Leicha Bragg, Ashley Willis, Jessica Koch
H14  4 to 10  What Makes the Money World Go Round! - Shane O’Connor
H15  4 to 10  Eight Strategies for Dealing with Differences in Student Readiness to Learn Mathematics - Prof Peter Sullivan
H16  5 to 8  Chocolate, Ratio, % and Multiplicative Thinking! - Christine Lenghaus
H17  5 to 9  Speedy Maths - A Lesson in Fluency - Thao Huynh, Victor Vu, Tim Purcell
H18  5 to 10  Engage Your Students With a Problem Solving Relay! - Maggi Gunn
H19  5 to 12  Hanlon’s Handy Hints! - Stephen Hanlon
H20  5 to 12  Down To Earth Mathematics - Leigh Thompson, Luke Blythman
H21  5 to 12  Lies, Damned Lies, and Statistics - John Bament
H22  6 to 8  An Introduction to Programming in Scratch - Jan Honnens
H23  6 to 12  Mathematical Marvels to Liven Up Lessons - Andrew Wrigley
H24  7 to 8  SpyClass: An Adventure in Game-Based Learning - Evan Curnow, Brent Ramsay
H25  7 to 10  From Geometry to Algebra with Polygons - Andrea Van Graan
H26  7 to 10  Harnessing Aboriginal and Torres Strait Islander Data - ABS Products Supporting Statistical Learning - Frances Mawdsley
H27  7 to 10  Expansion and Factorisation - Stephen Swift
H28  7 to 11  If Size Doesn’t Matter, Context Definitely Does - Alexandria Dowson
H29  7 to 12  Pythagoras Flirts with Lumeracy and Technology in the Aegean Sea - Rama Ramakrishnan
H30  7 to 12  Mathematics of Oceans - Waves Sharks and Ships - Paul Pascoe
H31  7 to 12  Why Cubic Polynomial Functions? - Dr David Leigh-Lancaster, Antje Leigh-Lancaster
H32  7 to 12  An Overview of Mathematica and Wolfram|Alpha for Years 7-12 - Craig Bauling
H33  7 to 12  The Pedagogical Advantages of the Wireless Networked Classroom - Dr Ray Williams
H34  7 to 12  Going SOLO in Mathematics - Diane Farrell, Kimberley McGillivray
H35  8 to 12  Developing Students Sample-To-Population Inferential Reasoning - Dr Michelle Dalrymple
H36  10 to 12  Working in the Classroom with the New ClassPad fx-CP400 CAS Calculator - Charlie Watson
H37  10 to 12  Graphing Gallery with the TI-Nspire CAS Calculator - Shane Dempsey, Peta Taylor
H38  10 to 12  Team Teaching Senior Mathematics - Can it Work? - Ewan Campbell, Rebecca Cooper
H39  11 to 12  Planning and Assessing SACs in VCE General/Further Mathematics - Sandra Wright, Ronda Hazell
H40  11 to 12  Creating an Online Moodle Course for Your Mathematics Class - Mehmet Altundal
H41  11 to 12  Quadratics, Straight Lines, Cubics, Tangents and Areas - Raymond Rozen, Shirly Griffith
H42  11 to 12  Maximization Using Maple: Polya Approach with Multiple Representation - With or Without Calculus - Prof Bill Blyth, Dr Asim Ghous
SESSION DETAILS
SESSION A: 11:10am-12:10pm Thursday 5th December

AK1  Grouping: Successes, Surprises and Catastrophes
Keynote Years F to 12
Dr Gaye Williams - Deakin University, VIC
The Australian Mathematics Curriculum emphasises the need to develop mathematical creativity to foster deep learning. Gaye’s reflections about composing groups to enable such activity focus on successes, surprises, and catastrophes. These findings are shared to enable others to vicariously experience the surprises, learn from the catastrophes, and gain increased awareness of various potential benefits. The classroom teachers who have so generously shared their classes with Gaye during her research have contributed greatly to increasing the diversity of grouping ideas we have tried, and the range of successes achieved. You will see we have learnt a great deal from surprises and catastrophes.

Gaye Williams, senior lecturer at Deakin University, and Honorary Senior Fellow at the International Centre for Classroom Research (University of Melbourne), spent more than twenty-five years as a secondary mathematics teacher. Her research on collaborative group work commenced in her Specialist Mathematics classes. Her PhD (within David Clarke’s international Learners’ Perspective Study) provided opportunity to visit many classrooms internationally. Her recent longitudinal study in upper primary school, funded by the Australian Research Council was “the role of resilience in collaborative problem-solving”. She has received many invitations to work with schools, clusters, and education systems to increase collaborative learning in mathematics.

AK2  What’s New and Exciting on the Web
Keynote Years 8 to 12
Douglas Butler - ICT Training Centre, Oundle, UK
Whatever device you are using, the quality of online material for mathematics teaching continues to impress. In addition the ease with which teachers, students and parents can all now communicate with each other gives us an invigorating new dynamic for learning mathematics. Dramatic changes in hardware have forced the content providers into new touch-driven environments and a new wave of writers has emerged who are serving up excitingly fresh ideas. In this presentation Douglas will cherry-pick from the best of his TSM Resources website - www.tsm-resources.com.

After graduating in Mathematics and Electrical Sciences at Cambridge University, and a spell with EMI Records, Douglas taught secondary Mathematics. He was Head of Mathematics at Oundle School (Peterborough UK), and Chairman of MEI, a leading UK curriculum development project. A keen pianist and dinghy sailor, he frequently speaks at international conferences, was a major contributor to the ICMI technology study in Hanoi (December 2006), and is a lead author of Autograph (version 3.3 Mar 2012). He maintains his TSM Resources site with educational resources in many subject areas, and organises the popular annual TSM workshops for teachers. debutler@argonet.co.uk

A3  Authentic, Play Based Maths in the Early Years
Workshop Years Pre-Kinder to F
Caroline Barnett - Swinburne Prahran Community Children’s Centre Co-op, VIC
Liz Kennedy - Swinburne Prahran Community Children’s Centre Co-op, VIC
Ramila Sadikeen - Swinburne Prahran Community Children’s Centre Co-op, VIC
The development of numeracy skills begins in the early years through play. Two educators working in a 3-4 year old kinder will share how they have incorporated numeracy into a play based, early years environment. A range of activities will be explored that stimulate an authentic interest in numbers, shapes and measures to promote a numeracy rich environment.

Repeated as H2

A4  Working Mathematically with Infants
Workshop Years K to 2
Douglas Williams - Black Douglas Professional Education Services, VIC
Children learn more and teachers love it. Developed by teachers who are engineering their classrooms to enhance children’s number sense, Working Mathematically with Infants splices Threaded Activities from Calculating Changes
with Investigations adapted from Mathematics Task Centre and elsewhere. Access to Maths300 is not necessary, but enriches if available. Threading is a teaching technique using rich, differentiated activities for small amounts of time often. The workshop introduces sample activities and investigations and the planning model teachers have developed to implement them. Mathematical conversation and learning in community - whole class and small groups - are key features.

Not repeated

A5  POP Maths for the Primary School
Workshop   Years F to 7
Georgina Ferencz - Deakin University, VIC
Pop music, pop art, and pop culture are all familiar terms, but how might the essential ideas behind these be applied to our thinking about mathematics? The aim of POP Maths is to develop a broader view of the nature, accessibility and purpose of mathematics, and thereby build more positive attitudes and engagement to mathematics learning. When participating in POP Maths, children are encouraged to recognise that mathematics is ever present in our surroundings, many of our activities, and in the natural environment. In this presentation I will discuss the key ideas of POP Maths and share some examples drawn from the successful POP Maths program conducted in partnership between my mathematics education student teachers and a local primary school.

Repeated as G4

A6  Improving NAPLAN Results with a Problem Based Maths Approach
Workshop   Years F to 9
Kathryn Palmer - Melton Network, VIC
This workshop will give participants an opportunity to unpack the 4 proficiency strands in the Australian Curriculum; they will make links to NAPLAN testing and highlight the importance of a problem based maths curriculum. Through the workshop participants will use an analysis spread sheet to help them identify misconceptions from the data and gaps across year levels and then how to use the data to inform teaching and improve student learning outcomes.

Note: Bring a USB to collect the analysis spread sheet and resources.

Not repeated

A7  Digital Resources That Support the Teaching of Mathematics
Computer Workshop   Years F to 10
Helen Gist - DEECD, VIC
Denise Jacobsson - DEECD, VIC
Rhonda Keysers - Mount Eliza Secondary College, VIC
DEECD provides high quality digital resources organised around the key concepts of AusVELS Mathematics from Foundation Level to Level 10/10A. Participants in this workshop will have the opportunity to explore Mathematics eBookboxes and other digital content. The Mathematics eBookboxes bring together relevant research, background information, teacher guidance and activities that meet the needs of individual students.

Not repeated

A8  Connect with Maths, Your New Online Community
Lecture   Years F to 12
Renee Hoareau - AAMT, SA
The Connect with Maths Project aims to build a dynamic education community to support Australian teachers of mathematics in intuitive, personalised and flexible ways. Teachers will access a range of networks and activities that support quality contemporary learning in the context of implementation of mathematics in the Australian Curriculum. The Connect with Maths project is funded by the Australian Government Department of Education, Employment and Workplace Relations through the Mathematics and Science Participation Program. Come and learn about the current communities and how you can be involved.

Repeated as E8

A9  Revealing Quality Teaching
Lecture   Years F to 12
Alexander (Alec) Young - Ingenious Technological Enterprises, TAS
Commercial Presentation
Alec has collaborated with schools in three states to develop a ‘world first’ means by which teachers monitor the quality of their teaching through assessment for learning. A speaker at the ACEL 2012 conference told her audience “The students in my school, on average, learn at twice the pace of the nation and at twice the usual depth”. Teachers achieve this by using their school’s photocopier as a high speed scanner providing forensic feedback on each student’s learning needs, thus assisting in the development of individual learning plans for each student based on their learning needs. This has transformed teaching, enabling huge productivity gains.

Repeated as F9
A10 Mathletics Assessment and Reporting

**Computer Workshop**
Andrew Nicholls - 3P Learning, NSW

**Commercial Presentation**
This session will focus on all the new additions to the assessment and reporting functions within Mathletics. We will look at how to obtain formative assessment data using Mathletics, and how to use that information to make key pedagogical decisions. Teachers are shown how to modify course curriculum content in order to design individual or group programs of study for students who need greater degrees of differentiation. Completion of this session ensures teachers are better prepared to use Mathletics as a teaching tool to respond to actual student performance, ensuring closer alignment to student learning goals.

*Repeated as E9*

A11 Musical Algebra

**Lecture**
Kim Bulluss - Cognition Education, NZ
Anuja Singh - Homai School, NZ

Musical algebra is a practical workshop looking at patterning using untuned musical instruments. No musical experience is needed. Come along and have fun while learning some experiences to expose young children to algebraic thinking. This workshop has been extremely popular in New Zealand - so don't miss out!

*Note: Please bring an untuned musical instrument with you.*

*Repeated as B11*

A12 The Concrete-Pictorial-Abstract (CPA) Approach in Primary Mathematics

**Workshop**
Dr Ban Har Yeap - Marshall Cavendish Institute, Singapore

The CPA Approach is a fundamental feature of Singapore mathematics teaching. Based on Bruner’s ideas of representations, this approach is taught to all pre-service teachers in Singapore and is the approach used in preparation of all curriculum materials. In this session, participants will see how this approach is used in to help students develop strong conceptual understanding in selected topics such as whole numbers, fractions and area.

*Note: Please bring a pair of scissors for the session.*

*Not repeated*

A13 Calculating Card Conundrums: Using Playing Cards to Develop All Four Proficiencies

**Workshop**
Dr Paul Swan, WA
Derek Hurrell - University of Notre Dame Australia, WA

Participants in this session will play a number of card games, all linked to the Australian Curriculum. The focus will be on the development of the proficiencies of; Understanding, Fluency, Problem Solving and Reasoning all using an ordinary pack of cards.

*Not repeated*

A14 Fostering Mathematical Understanding Through Virtual and Concrete Manipulatives

**Workshop**
Dr Esther Loong - Deakin University, VIC

Much of mathematics learning is often characterised by surface and rote learning. In this workshop I will share with you how to use concrete manipulatives to foster deeper understanding of mathematical concepts such as place value and bases (in number and operations), area and perimeter (measurement) and 2D and 3D geometry. I will also show you how these understandings can be further enhanced and reinforced through the use of virtual manipulatives that are freely available on the Web.

*Note: Participants please bring your own laptop or iPad -fully charged.*

*Not repeated*

A15 Building Family School Partnerships with Maths and Robotics

**Workshop**
Nathaniel Bradshaw - Caroline Chisholm Catholic College, VIC

Caroline Chisholm Catholic College is a coeducational Catholic Secondary School in Braybrook, Victoria. For the last three years the College has successfully run regular Middle Years Maths sessions for families in the evenings and has also started up a team of families who regularly compete in Robotics competitions. This session will share strategies used when communicating with families and there will also be a robotics demonstration.

*Repeated as H8*
A16  Place Value Assessment and Teaching in Year 2-6
Workshop  Years 2 to 6
    Angela Rogers - RMIT University, VIC
This session will report on the findings of my research project developing a comprehensive paper and pen and online whole number place value assessment tool for Year 2-6 students. The emergence of seven critical aspects of place value will be shared and practical ideas for teaching these will be explored. Examples of items from the PVAT (Place Value Assessment Tool) will be used to illustrate common student misconceptions that emerged throughout the project.
Repeated as E11

A17  Teachers 4 Teachers Maths Box Orange
Workshop  Years 3 to 5
    Debbie Reinholtd - Fleetwood Primary School, VIC
    Sarah Peterson - Fleetwood Primary School, VIC
The Teachers 4 Teachers team have developed an exemplary mathematics resource for students in Years 3 to 5. Maths Box Orange is intended to guide and support teachers in developing the mathematics curriculum. Problem solving features strongly and the material can easily cater for a range of student needs. Maths Box Orange has 30 topics that are aligned with the Australian National Mathematics Curriculum. Each student is presented with a Card on a given topic with a range of mathematical questions. The elements of mathematics are developed sequentially as the student progresses through the topic in the given colour set.
Repeated as H12

A18  Teaching Mathematics Developmentally
Workshop  Years 3 to 8
    Bruce Williams - CreatingRealMathematicians.com, VIC
There is a natural progression of understandings related to the teaching of mathematics. We will focus on how to teach the four operations and the developmental sequence for each and how they are all actually different ways of saying the same thing. We will investigate the mental strategies we use unconsciously every day and how to develop these skills in our students. We will provide activities to take back to the classroom as well as a formative assessment tool for recording student progress.
Repeated as B12

A19  Mathematically Rich Tasks to Develop Engagement, Thinking, Reasoning and Understanding
Workshop  Years 3 to 9
    Birsin Reynolds - Karoo Primary School, VIC
Commercial Presentation
In Maths education across Australia there is a strong and definite shift in emphasis towards a more open-ended investigative approach. This shift is entirely logical, as the wider community wants students who have a toolbox of algorithmic skills but more importantly who can also think, reason and solve problems with those skills. Many examples of practical and immediately usable classroom activities have evolved from across Australia in response to this changing emphasis. Features of the lessons include open-ended investigative approaches, cooperative group work, meaningful contexts, use of technology, concrete materials, kinaesthetic opportunities, catering for range of students’ abilities and seeking genuine understandings.
Not repeated

A20  Interactive Diagrams to Assist Mathematical Understanding
Lecture  Years 3 to 10
    Dr Ian Lowe - The Mathematical Association of Victoria, VIC
Ian has produced hundreds of interactive diagrams using MS Excel, to match all of the topics in Years 3 to 6 in AusVELS (or the AC) under the title ‘Interactive Learning’. These will assist you to present the mathematical ideas clearly and your students to review the ideas in their own time. They should always be used as extensions of hands-on activities. The spreadsheets are not just rows and columns; instead they assist understanding through diagrams that respond to the student’s input. A selection will be demonstrated covering a cross-section of content and levels.
Commercial (MAV product)
Not repeated
A21 An Interactive Workshop Presenting Exciting Decimal Measurement Tasks to Enhance Student Thinking
Workshop Years 4 to 7
Linda Cheeseman - Cognition Education, NZ
Bina Kachwalla - Cognition Education, NZ
In this interactive workshop participants will be engaging in rich tasks that present real life problems linking decimals and measurement. The content will focus on the conversions of decimal numbers and the units of measurement. Problems will be explored using a range of representations such as drawings, mathematical equipment etc. Teachers will be viewing the problem solving strategies through the lens of student thinking. Emphasis will be placed on the use of mathematical language, and the importance of mathematical justification, argumentation and reasoning. Come along to this workshop to find interesting ways to excite students learning about decimal fractions.
Repeated as B14

A22 Integrating Learning Theories When Designing, Implementing and Evaluating Rich Mathematical Tasks
Lecture Years 4 to 8
Diane Itter - La Trobe University, VIC
Cassandra Worm - La Trobe University, VIC
Heidi Bassler - La Trobe University, VIC
Bethany Fitzpatrick - La Trobe University, VIC
Third year Pre-service teachers will share their experiences of integrating learning theories and practical knowledge when designing, implementing and evaluating rich mathematical tasks. Pre-service teachers completed a combined project within a theory based subject:
◊ Theories of Learning, and a mathematical pedagogical and content based subject
◊ Teaching Mathematics, whereby they designed a rich mathematical task and adapted this in light of theories relating to deep learning and critical thinking, student autonomy, self regulation, metacognition, and personalised learning.
The Pre-service teachers implemented their task whilst on practicum, and evaluated the effectiveness of the task in terms of their students’ responses. This session will highlight their successes and challenges.
Not repeated

A23 Using Whole Numbers and Number Lines to Develop Fraction Understanding
Workshop Years 4 to 9
Dr Catherine Pearn - The University of Melbourne, VIC
Dr Max Stephens - The University of Melbourne, VIC
This presentation focuses on students’ use and understanding of number lines in two main ways. First, it examines how students represent fractions on a number line, particularly the strategies they employ when placing simple fractions on a number line, without necessarily measuring, but relying on making sensible subdivisions ‘by eye’. A second focus is on how number lines, initially involving whole numbers and their fractional parts, can be used to develop fractional language and to articulate fractional concepts that can subsequently be applied to fractions themselves.
Repeated as E18

A24 Problem Solving
Workshop Years 5 to 8
Daniel Avano - Museum Victoria/Scienceworks, VIC
Simon Keily - Museum Victoria/Scienceworks, VIC
In this session participants will work through a series of hands-on problems (real-life situations) to test out their problem solving skills. This will be followed by a discussion about practical ways of going about solving problems. Participants will then prepare their own individual problem solving checklist. It’s a great way to introduce problem solving in primary or lower secondary school. This session is based on a program available to schools at Scienceworks. Participants will also be given a quick overview of other maths resources available from Museum Victoria.
Repeated as B19

A25 The Earth is a Sundial
Workshop Years 5 to 8
Tim Byrne, VIC
Imagining the Earth is a sundial helps us to understand the mathematics of representing time based on diurnal rotation. Sundials model the passage of the sun around the Earth, where each hour is defined by 15 degrees of shadow movement. Participants make an equatorial sundial from a CD from first principles and learn the variations required to read the sundial as local clock time through using an equation of time, including the sun’s seasonal
Participants are introduced to some other simple solar instruments which are mathematically user friendly.

**Not repeated**

**A26 Algebra as Story Telling**
Lecture
Adjunct Professor Mike Clapper - Australian Mathematics Trust, ACT

This presentation describes a framework for the introduction and development of algebraic thinking which develops in students the understanding that algebra is about ‘things that happen to numbers’ in a narrative context. Whilst it draws on some well-understood pre-algebraic pedagogies such as machine game and back-tracking, it develops these into a fuller picture of algebraic expression (or equation) to the story which it tells about numbers. Many examples will be given of practical activities which will allow students to use their emerging algebraic skills to explore patterns and develop algebraic thinking.

**Repeated as B21**

**A27 A Formula for Maths Lessons**
Workshop
Meredith Clegg - Hume Central Secondary College, VIC
Justine Johnston - Hume Central Secondary College, VIC
Lisa McLeish - Hume Central Secondary College, VIC

What is the formula for a good secondary maths lesson? For us it is a lesson structure that hooks students from the start, explicitly guides the teaching and practice, and culminates effectively with cognitive closure. This workshop will examine these components of our ‘Explicit Instruction Model’ for lesson design and our use of peer coaching in collaboratively planning the lesson, choosing an area to improve, collecting observable data and debriefing to support continuous improvement in maths teaching.

**Repeated as B22**

**A28 Tools for Planning and Assessment - Using the Numeracy Improvement Strategy Approach**
Workshop
Koreena Carlton - Baden Powell College, VIC
Nick Keating - Baden Powell College, VIC
Sara McKee - Baden Powell College, VIC
Erin Cole - Baden Powell College, VIC

Baden Powell College had worked with New York Numeracy Consultants Chris Coombes and Frank Schoonderbeek as part of the Numeracy Improvement Strategy for the past 3 years. As a Middle Years team we have developed planning documents based on AusVELS inclusive of learning targets, introductory tasks, diagnostics and assessment tasks with rubrics. The planning documents have provided a strong structure to meet the individual needs of the students through a differentiated approach. The formative assessment tasks are moderated as a team and direct and drive future planning. Some examples of planning documents, assessment tasks and conferencing tools will be provided to take away.

**Repeated as B23**

**A29 Hanlon’s Handy Hints!**
Lecture
Stephen Hanlon - Braemar College, VIC

A collection of mathematical tricks, curios and hints to inspire, engage, bemuse, provoke thought, promote discussion and investigation, or just to entertain and amuse. All have been accumulated from various sources over the years and used in classes with students of all ages. They can be used as a warm-up activity or to spice up a lesson. Come and try for yourself, and see how and why they work. Most require no more than a pen, paper and perhaps a calculator from your audience, and a little mental arithmetic (or mathemagics) from you.

**Note:** Please bring a scientific calculator for ease of calculations.

**Repeated as H19**

**A30 Animating Statistics Through Physical Activity and Simple Measures**
Workshop
Colin Chapman - Caroline Chisholm Catholic College, VIC

Big data is an important artefact of our connected age. Every keystroke, click and location laden social media interaction contributes to the accumulating data that is being marshalled to inform us about global disease, political expression and consumption. Learners must understand statistics and how it packages data for understanding so that they can collect, process and interpret data to make decisions. This workshop presents small data activities for learners to learn statistical techniques using an inquiry approach. The activities use physical challenge to collect real data that participants can use to explore statistics, correlation and causation using spreadsheet programs.

**Note:** Bring a charged laptop. We will be using Google Docs.

**Repeated as B27**
A31  **Algebra - Try Something Different**  
*Workshop*  
Paul Dann - Belmont High School, VIC  
Jane Kahle - Belmont High School, VIC  
Hands-on activities focusing on Levels 7-9 of the Number and Algebra strand of AusVELS. Paul will demonstrate original, simple and fun ideas that engage students in Mathematics and at the same time teach those students the basics of Algebra. He will model lessons that use recycled, low-cost and easy to obtain equipment. He is an experienced full-time teacher (Years 7-12) at Belmont High School in Geelong and he has presented workshops for Teacher Training Australia (TTA). Paul will also discuss patterns, the need for formal algebraic structures and the origins of Algebra. He will surely inspire you to take up a new approach to your teaching of Algebra and other topics.  
*Repeated as E25*  

A32  **5 Minute Activities for the Middle School Classroom**  
*Workshop*  
Kim Streek - Manor Lakes College, VIC  
Allesha Fecondo - Manor Lakes College, VIC  
This session is designed for teachers to bring along their own ideas for a 5-minute activity to use in the middle school classroom. At the end of the session we will compile all of these for all candidates to take home and use in their own classrooms.  
*Note: Please bring a 5-minute activity to share.*  
*Repeated as B32*  

A33  **Infusion of Games Based Learning with Food: An Innovation in Mathematics Education**  
*Lecture*  
Dr Philip Button - Button Food Science & Nutrition, VIC  
Dr John Lenarcic - RMIT University, VIC  
Food science is a multidisciplinary science in which all science and mathematics disciplines are applied to the manufacture and distribution of food. Games based learning is a novel approach in teaching utilising a gaming environment to enable a higher level of student engagement and motivation compared to traditional instructional techniques. Packing order and ratios are particularly suited to this innovative pedagogical approach. A range of conceptual ideas shall be presented, utilising games-based teaching of mathematics within the umbrella of food science, food technology and nutrition, which offer exciting possibilities to engage students with real-life scenarios.  
*Repeated as G30*  

A34  **Harnessing Aboriginal and Torres Strait Islander Data - ABS Products Supporting Statistical Learning**  
*Lecture*  
Frances Mawdsley - Australian Bureau of Statistics, VIC  
The ABS publishes statistical products which provide opportunities to explore a range of data relevant to the lives of Aboriginal and Torres Strait Islander Australians. This session aims to provide suggested entry points for Australian teachers to explore and harness ABS data, applying them to learning about Aboriginal and Torres Strait Islander Australians through authentic data. This session has relevance to the Statistics and Probability content strand, the general capability of Numeracy, and the cross-curriculum perspective of Aboriginal and Torres Strait Islander Histories and Cultures.  
*Note: Participants are encouraged to bring a laptop or tablet to follow exploration of the ABS and Education Services websites.*  
*Repeated as H26*  

A35  **An Overview of Mathematica and Wolfram|Alpha for Years 7-12**  
*Lecture*  
Craig Bauling - Wolfram Research, USA  
This seminar gives an overview for using Mathematica and www.WolframAlpha.com in Years 7-12 classrooms. Topics include using free-form English language to compute, engaging students in deeper exploration, creating lesson plans and quizzes, accessing the vast library of pre-built learning materials, and using built in real-world datasets as examples for exploration. Examples from the ACARA standards in Statistics, Math and Sciences will be used to guide the discussion. Participants will receive session materials for later reference.  
*Repeated as H32*
A36  I Cancelled All Maths Classes!
Lecture  
*Erin Gallagher - Mathspace, ACT*

2012 was the year to make change happen. In a very traditional public senior secondary system I cancelled math classes, implemented flexible options within the schools static timetable, front-ended curriculum online, challenged our attendance systems, raised the bar, raised expectations, engaged in REAL teaching, REAL learning and the complexity surrounding creating chaos, injected disruption and got results, knocked down walls, reached capacity of our WiFi and had many interesting conversations about what real learning is. After cancelling classes, we have more mathematics going on than every before. Using my last school as a case study I demonstrate the power of Blended Delivery models and touch on a variety of blended learning and flipped classroom models from around the world.

*Repeated as F32*

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A37  A Prime Time with Mathematica
Computer Workshop  
*Dr David Leigh-Lancaster - VCAA, VIC*
*Antje Leigh-Lancaster, VIC*

In this session we will consider how the number functionality of a computer algebra system such as Mathematica can be used to support exploration of prime numbers in the secondary curriculum. This will be done using a combination of prepared interactive files (notebooks) which the user edits and evaluates or manipulates and direct computation of examples which the user constructs. Some related Demonstration Projects from Wolfram Research will also be looked at. Previous experience with Mathematica is not required. However some familiarity in working with mathematical software in a windows environment would be helpful.

*Note: Participants should bring along a USB if they wish to be able to copy notebook files from the workshop.*

*Repeated as G33*

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A38  Flipping Out - Screencasting to Reclaim Precious Lesson Time and Extend Your Learners
Lecture  
*Neil Holden - Methodist Ladies’ College, VIC*

How can online learning/blended learning be utilised in order to make the best use of classroom time, to develop autonomy in our students, and to provide the most tailored support for students at either end of the achievement spectrum? You will learn how to organise a unit of work to include blended learning, with a focus on screencasts, including demonstrations and technical hints. You will hear about our successes and failures, and some tricks to make the best of this process in a time- and cost-effective manner.

*Note: Bring your laptop.*

*Repeated as F33*

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A39  Constructing Animated Proofs Using Dynamic Geometry Software
Computer Workshop  
*Dr Wee Leng Ng - National Institute of Education, Singapore*

Dynamic geometry software (DGS) refers to computer programs which allow one to create and then manipulate geometric constructions. Many DGS packages offer graphing utilities as well. DGS, which is suitable for implementation in a discovery-learning environment or for demonstration purposes, is particularly common in secondary school geometry classrooms. In this workshop we shall explore the use of DGS in constructing animated geometric proofs. The DGS used in this workshop is the TI-Nspire CAS Teacher Software.

*Repeated as C31*

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A40  Modelling the World with Mathematica
Lecture  
*Brian Hodgson - Independent Consultant, VIC*

This session explores two reasons why many students meet a brick wall when introduced to algebra in the middle years: the dominance of x as a universal variable and the absence of realistic contexts. One day x can be length, next width and then area! Mathematica works comfortably with length, width and area as variable names. It also facilitates the manipulation of 'dirty' data typically associated with genuine modelling without compromise. Ready to use work units will be available to participants. No prior experience with Mathematica is required.

*Repeated as B35*
A41 The Mathematics of June 16: Perspectives from Learners in South African Schools
Lecture Years 7 to 12

Professor Willy Mwakapenda - Tshwane University of Technology, South Africa
Williams Nlofu - Tshwane University of Technology, South Africa
Asaph Nkomo - Tshwane University of Technology, South Africa

Every year in South Africa, June 16 is remembered as National Youth Day. It is a day that commemorates a major event that took place in 1976 in South Africa when young people protested against the apartheid regime. There have been many debates and discussions about this event. Many of these discussions have centred on freedom and other political dimensions of the South African society. In this presentation we present learner narratives from a survey about what South African learners from a range of year levels know about June 16. While noting a diverse range of political dimensions of learners' knowledge of June 16, we focus particularly on how their knowledge relate to participation in mathematics education in their society.

Not repeated

A42 Mathematica, An Introduction to Some Secondary (All Levels) Classroom Activities
Computer Workshop Years 7 to 12

Ian Willson, VIC

This workshop will provide to those with little or no previous experience of Mathematica an introduction to what it is, what it can do and how secondary students can use it as both a computational and discovery tool (an arguably cheaper and better alternative to the CAS calculator). Activities will be provided for use in the workshop and for classroom use back at school. Areas covered will include: basic algebra, statistics, functions and graphs, circular functions, calculus and probability. The Manipulate function will be demonstrated (the Mathematica equivalent to CAS slider functionality).

Note: Participants require access to Wolfram Mathematica software, either on their own laptop or at their computer lab workstation (if the software is available on the network).

Repeated as G34

A43 Career Development as the Business of Maths
Workshop Years 7 to 12

Mary Harrington - DEECD, VIC

Rapid changes to learning and work in today's world make it essential that young people and their Maths teachers take a more active role in their career development. In this workshop the Victorian Careers Curriculum Framework will be explored in context of the Mathematics curriculum. Linking the VCCF to Maths can help focus young people’s attention on recognising or creating opportunities, making informed choices and defining and achieving their career goals. This can inform Career Action Plans that reflect their increased learning and possible future actions. The workshop will include tools and resources to open up career opportunities related to Mathematics. http://www.education.vic.gov.au/school/teachers/teachingresources/careers/carframe/Pages/aboutframework.aspx

Repeated as G34

A44 The Barometer Question
Workshop Years 7 to 12

John Bament - O'Loughlin Catholic College, NT

The barometer question was popularised by the American test designer professor Alexander Calandra and led to a student saying that he was fed up with his professors: “teaching him how to think … rather than teaching him the structure of the subject”. Through the use of various internet and calculator options this session will focus on the art of questioning. We will use electronic technology to ask questions in different guises and how they can be used as an assessment tool. In my experience this approach motivates and increases student interest in their learning of Mathematics and aids teachers’ reflection on diagnostic, formative and summative assessment.

Not repeated

A45 Teaching With Your iPad
Lecture Years 7 to 12

Freda Goddard
Ian Taylor

Commercial Presentation

Doceri is the professional iPad interactive whiteboard and screencast recorder with remote desktop control, from SP Controls. This session will showcase how we’ve used Doceri in the classroom and the powerful impact it has had on our lessons. Connect to Doceri Desktop to access, control and annotate over any file or program on your computer. You can create, edit, replay and perfect your lesson or annotated presentation before going to class or recording a screencast. ‘Doceri Remote’ is available free in the iTunes App store. Download a free trial of ‘Doceri Desktop’ at www.Doceri.com. Visit www.teachingwithyouripad.com to see how we use it in the classroom.

Repeated as F37
A46  Never Used a ClassPad II and Need to Know How?  
Workshop  
Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA  
This workshop is for those who have never used a ClassPad II (FX-CP 400) and would like to learn the fundamentals in a short space of time. You will leave with support materials that will assist you in taking the next step. A tried and proven workshop that will have you using the machine with confidence by the end of the hour.  
Note: ClassPads will be available for loan during the session.  
Repeated as D36

A47  Will the MOOC’s Tsunami Engulf Secondary Mathematics Education?  
Lecture  
Dr Brenton Groves - Independent Researcher, VIC  
Massive Open Online Courses (MOOC) are the biggest paradigm shift in the history of tertiary education but a student-directed connectivist-education ensures a difficult future for tertiary academics. The reverse is true for teachers. They can increase your understanding of a subject, cover new topics and keep that gifted student in the back of the room busy. Individual MOOC topics have discussion groups that expand your classroom to the whole world. They are free so the main investment is your (very valuable) time. The Conference Proceedings index some of the immense resources of the MOOC world to compliment this lecture.  
Repeated as G41

A48  Fractals and Logs in Nature  
Workshop  
Michael Chapman - St Mark’s Anglican Community School, WA  
Has the use of CAS calculators made using Logarithms as a calculation tool redundant? In this session we will explore many of the natural occurrences of Logs and why they will always be applicable to the real world. Through this, we will see how Logs are linked to the study of Fractal patterns and Fractals in nature. Using the TI-Nspire facilities, we will be able to explore a number of Fractal patterns starting at a basic level and working up to the use of Logarithms.  
Repeated as F41

A49  Analysis Tasks for VCE Mathematics 2014 and Beyond  
Lecture  
Allason McNamara - Mount Scopus Memorial College, VIC  
Dr Philip Swedosh - King David School, VIC  
Dean Lamson - Ballarat Clarendon College, VIC  
Allason, Philip and Dean have designed a number of new Analysis Tasks which can be attempted by VCE Mathematical Methods CAS and Specialist Mathematics students and interested teachers and younger high achieving students. These have been designed so that students and teachers can apply their mathematical knowledge to analyse, investigate, model and solve problems in a variety of situations. One of the tasks is called Lacsap’s Triangle and another involves Proof and Number from the new Specialist Mathematics Australian Curriculum course. Other tasks will involve content from the VCE Areas of Study: Functions, Relations and Graphs, Algebra, Calculus and Probability. These tasks have been developed using Mathematica but can be adjusted to suit other Computer Algebra Systems.  
Repeated as B43

A50  On Developing Problem Solving Strategies  
Lecture  
Hussein Tahir, VIC  
Conic sections can be used as tools in solving tangency problems related to circles. In this seminar, some historical problems will be considered and use newly developed algebraic and graphical methods to solve them. These methods are based on a new approach to the conics whose efficiency becomes evident when dealing with problems with multiple answers and construction problems related to infinite chains of tangent circles.  
Repeated as F46

A51  School-Assessed Coursework - Insights and Examples from Queensland Senior Mathematics  
Lecture  
Maggi Gunn - Brisbane Girls Grammar School, QLD  
Jacqui Klowss - Marist College Ashgrove, QLD  
The challenges of school-based assessment are many. Come along to share some insights and examples from Queensland Senior Mathematics – presented by Heads of Faculty from two independent Brisbane schools.  
Repeated as E44
A52  Modules and Videos for the Senior Curriculum
Lecture

Dr Michael Evans - Australian Mathematical Sciences Institute, VIC

Twenty-five modules for Year 11 and 12 teachers have been developed. They deal with topics in functions, coordinate geometry, probability and statistics. They are written for teachers and provide coverage of topics in the Australian Curriculum but many of these topics are in state and territory curriculum now. The resources are web based and free. These modules follow on from the modules developed by AMSI for the F-10 curriculum that are available through SCOOTLE. Videos of applications of Mathematics are included.

Repeated as B45

SESSION A-B: 11:10am-1:30pm Thursday 5th December

A-B1  A3 Maths Mat
Workshop

Rob Proffitt-White - Department of Education, QLD

Teachers will be taken through an A3 maths mat that has been designed from Rob's action research work with 25 primary and high schools as an Australian Curriculum consultant with the Department of Education and his work lecturing graduate teachers at CQU. The mat takes teachers through 10 minute activities designed to raise awareness of misconceptions, offer teachers essential remediation strategies, builds formative assessment techniques and brings together the proficiency strands in an fun, engaging way. The mat has also been an essential tool with the Numeracy Coaches in Rob's region and with his parental engagement program.

Repeated as F-G3

A-B2  Learning Through Games
Workshop

Peggy Ashton - Latrobe University, VIC
Jennifer Vincent, VIC

This session will workshop a variety of games, many from different cultures, for developing students' mathematical skills and concepts. The purpose and value of incorporating games into the classroom program will be discussed. Whilst exploring a selection of games, participants will look at ways of adapting games to suit the needs of different groups of students. A CD of all materials will be provided.

Not repeated

A-B3  Making Mathematics Visual: The Model Method to Enhance Problem Solving Skills and Foster Pre-Algebraic Thinking
Workshop

Yueh Mei Liu - Alpha Academy Pte Ltd, Singapore
Veii Li Soo - Balaklava High School, SA

Multiplicative thinking and proportional reasoning underpin numeracy skills and mathematics learning at higher levels and teachers need to be equipped with problem-solving strategies which can help students reinforce these basic concepts and apply them to a variety of contexts. The model method is a visually powerful tool that enables students to understand and represent problems pictorially as a precursor to the abstract manipulation in problem-solving. This method has been a key strategy for all primary students in Singapore, especially effective with problems involving whole numbers, fractions and percentages, and ratio, to name a few. It has been used successfully with struggling Mathematics students in an Australian high school.

Repeated as F-G5

A-B4  Games in the 4-8+ Maths Classroom
Workshop

Richard Korbosky - ECU/MAWA, WA

Commercial Presentation

The Mathematics Games support essential mathematics learning, teaching and assessment principles, co-operative learning, thinking skills, student centred learning classrooms, independent learning and differentiation of the mathematics learning environment. The maths games in this workshop have been designed to give students an opportunity to have some enjoyment when learning about decimal place value, mental thinking, fractions, the four operations, money, pre-algebra and negative numbers. The number knowledge in the games ranges from early decimal number and money for 10 year olds through to the use of addition, subtraction, multiplication, division, fractions and algebra understandings for 12/13+ year olds.

Not repeated
A-B5 Making Maths Irresistible…
Computer Workshop

Michelle Button - Mangahigh.com, VIC
Mohit Midha - Mangahigh.com, UK

Commercial Presentation
Make maths irresistible by blending interactive games and clever adaptive quizzes to your lessons – all mapped to the Australian Curriculum. Students are not only engaged, with Mangahigh.com, students’ attitudes towards learning maths and subsequent learning outcomes improve dramatically! Imagine having an assistant that automatically identify gaps in your student's maths skills, then recommend lessons to bridge these gaps. Imagine setting differentiated tasks to your students seamlessly; then tracking your student’s progress instantly (against Australian Curriculum standard). Imagine report writing time, and a summary of your student’s achievements during the year is ready in one report. All this, and more, is possible with Mangahigh.com – Australia’s fastest growing online maths resource. It is easy to use and blends into your lessons effortlessly – come and join us in our session and see it all come to life!

Repeated as F-G7

A-B6 Creating Powerful Tools for Learning: Lua for Everyone
Workshop

Dr Stephen Arnold - T3 Australia, NSW

Lua is a popular and well-established scripting language which is now a key part of the TI-Nspire platform. While it potentially offers means to create almost anything you or your students can imagine, it is surprisingly accessible and easy to learn. By the end of this session you will be creating your own interactive Lua documents.

Note: Bring your own laptop with TI-Nspire software.

Not repeated

A-B7 Using ‘Algebra Tiles’ to Teach Integers, Expansion and Factorisation
Workshop

Michael O’Reilly - Mill Park Secondary College, VIC
Norrian Rundle - Epping Secondary College, VIC

This double session is an introduction to ‘Algebra Tiles’. ‘Algebra Tiles’ are a hands-on teaching aid used to introduce and teach Middle Years students directed numbers and expansion & factorisation of algebraic terms. The focus will be on how to introduce and teach algebraic expansion and factorisation using this successful hands-on teaching aid. This will include both linear and quadratic expressions. Detailed notes, including many examples, will be provided. Teaching strategies will be explained throughout the session. We will also provide participants with the templates to cheaply make their own class sets of ‘algebra tiles’. We will be developing the ideas firstly with integers, and then moving on to algebraic expansion and then factorisation. The ideas of using arrays and the algebra tiles build on the initial work with integers. [This is a repeat of the sessions we offered at the 2009 - 2012 MAV Annual Conferences.]

Note: Participants should bring along a USB Memory Stick.

Not repeated

A-B8 Reflective Practices
Workshop

Peter Fox - Texas Instruments, VIC
Russell Brown - Educational Consultant, VIC

Reflections of functions appear in a pure sense in most senior mathematics curricula; however related concepts can be dealt with much earlier in mathematics courses using activities that are fun, rewarding and challenging. This workshop provides examples of such activities applicable from Year 7 upward, followed by corresponding senior mathematics concepts using algebra, function notation, graphs and inverse functions.

Not repeated

A-B9 So This Will Be/Has Been Your First Year of Teaching Mathematics
Workshop

Rob Vermay, VIC

An experienced mathematics teacher at the end of his career shares a range of ideas, strategies and resources that may be of interest to beginning teachers of mathematics. This seminar will explore a number of issues of interest to new teachers including motivating students, common errors, class and time management, games, puzzles, activities and resources, settling into a new school etc. Other issues may arise during the session and will also be addressed. This is an expanded version of a popular option presented in 2012.

Not repeated
A-B10 Enrich Student Learning with TI-Nspire PublishView Computer Workshop

Neale Woods - Distance Education Centre Victoria, VIC

PublishView is one of the dynamic features of the TI-Nspire software. PublishView documents allow the user to create electronic documents that incorporate text, images, videos and internet links, as well as the seven TI-Nspire applications. These powerful documents allow teachers and students the opportunity to create a wealth of material to enrich learning in the mathematics classroom. In this session participants will have a hands-on opportunity to learn how to create TI PublishView documents. Creating videos and Lua programming will also be covered in the session. This workshop is suitable for both CAS and non-CAS.

Note: A computer lab will be provided. Participants may elect to bring a laptop as well.

Not repeated

A-B11 A Framework for Developing a Further Mathematics Data Analysis SAC Lecture

Peter Jones - Swinburne University, VIC

Developing a Further Mathematics data analysis SAC can be a challenging task. This workshop introduces the data investigation process as a possible framework for developing a data analysis SAC that is purposeful, statistically meaningful and that enables a wide range of statistical skills to be assessed in the one general context. Bring your own technology.

Repeated as F-G11

A-B12 Inspired Interactive Graphs and Simulations Workshop

Frank Moya - Educational Consultant, VIC

In this hands-on session you will create interactive dynamic graphs and simulations using user-friendly tools on the TI-Nspire CAS handheld, software or iPad App. You will come away from this session with templates to create your own interactive derivative graphs and related rates simulations. This session is suitable for TI-Nspire CAS veterans and newcomers alike, as the focus is on using features of TI-Nspire CAS that currently do not appear to be in common use.

Note: Loan handhelds will be available, or you can use your own TI-Nspire CAS handheld, software or iPad App, equipped with the latest operating system.

Not repeated

SESSION B: 12:30pm-1:30pm Thursday 5th December

BK1 Thanks for the iPads, But What are we Supposed to Do With Them? Using Technology in Primary Mathematics Classrooms

Keynote

Dr Catherine Attard - University of Western Sydney, NSW

Although not originally intended for use within educational settings when introduced in 2010, the iPad has fast become the ‘must have’ item in today’s classrooms. One result of this is that teachers are often expected to integrate iPads or similar technologies into teaching and learning without the support of appropriate professional development, particularly in relation to using the technology to enhance teaching, learning and student engagement. In this keynote I will discuss the implications of introducing new technologies into primary mathematics classrooms. Examples of a range of successful and not so successful strategies observed in recent research projects will be provided and discussed.

Catherine Attard lectures in primary mathematics pedagogy at the University of Western Sydney and comes from a primary teaching background. Catherine is an active member of the Mathematical Association of New South Wales and he Mathematics Education Research Group of Australasia and has presented workshops around Australia and internationally. Her research is focused on student engagement with mathematics and issues surrounding the pedagogical practices that influence students’ engagement, with a particular focus on primary and middle years’ classrooms. Catherine’s presentations bring together her background of theory, research and practice to present practical, engaging ideas that can be adapted to suit the diversity of learners found in every primary classroom.

B2 Playing Cards Workshop

Douglas Williams - Black Douglas Professional Education Services, VIC

Get out the playing cards and children know there is going to be a game. You have their interest straight away and that’s the first step in successful learning. Games don’t have to be complex to be valuable learning experiences,
but they do have to be purposeful. The workshop will include a smorgasbord of activities from sorting and matching cards to Cribbage (for which there is a world championship), all of which develop interest in and facility with number, especially mental arithmetic. It will be helpful if you can bring a device to access the Internet.

Not repeated

B3 Creating a Challenging Measurement Curriculum in the Early Years
Workshop
Dr Jill Cheeseman - Monash University, VIC
Dr Andrea McDonough - Australian Catholic University, VIC
Devising a measurement curriculum that is comprehensive and challenging is no small feat for teachers of the early primary years. A possible approach will be discussed and evaluated in the session. Ideas and examples will be drawn from research in the Investigating Young Children’s Learning of Mass Measurement Project but the broader measurement curriculum will be considered as well. It will be a hands-on planning and sharing session.

Not repeated

B4 Effective Teaching and Learning Using iPads
Workshop
Jennifer Bowden - The Mathematical Association of Victoria, VIC
Ellen Corovic - The Mathematical Association of Victoria, VIC
The use of iPads have become prevalent in primary classrooms. However teachers can find it challenging to find quality apps that enhance an effective mathematics program. Jen and Ellen will share a variety of iPad applications for students use as well as those to assist effective planning and assessment. All activities will be linked to the Australian Curriculum. Teachers will walk away with a variety of apps that can be integrated in a mathematics teaching and learning program as well as skills to chose further applications.

Repeated as F3

B5 Planning Units of Work to Develop Conceptual Understanding
Workshop
Nancy Surace - Catholic Education Office Melbourne, VIC
Mark Mudge - Catholic Education Office Melbourne, VIC
This workshop will use the content area of fractions to explore the process of how to plan units of work that build students’ conceptual understanding. Starting with the AusVELS Mathematics Curriculum, we will look at the place of key mathematical ideas, common misconceptions, assessment data, rich activities and ways to differentiate them as key elements in developing a unit of work.

Repeated as G2

B6 Teach Maths for Understanding F-6
Lecture
Dr Ian Lowe - The Mathematical Association of Victoria, VIC
If you are in one of the few schools who have not yet discovered this amazing website, this is for you. Ian Lowe has created Differentiated Unit Plans for all levels. Any teacher can hyperlink to suitable resources to enable learners at all levels to be taught and to learn. Differentiation is of two kinds: open-ended tasks that provide multiple entry and exit points, and targeted teaching and learning (both hands-on and ICT). In this session the primary levels (F to 6) will be demonstrated.

Not repeated

B7 Evernote: Tracking Student Performance
Workshop
Chris Sacco - Melton Primary School, VIC
Lauren Marriott - Melton Primary School, VIC
Michael Portaro - Melton Primary School, VIC
‘Evernote’ is an application available on any device (Apple, Windows, iOS and Android). It helps you to ‘remember everything’. Chris and Lauren have used this application to monitor student performance by taking photos, annotating work samples, creating cross-checkers and recording conversations. Throughout this process they have worked with Michael, their Numeracy Coach, to streamline the collection of necessary assessment evidence that informs and improves future teaching. This workshop will demonstrate practical approaches for educators to use in their daily practice that will ensure accountability for all.

Note: Participants will need to bring along a fully charged laptop or mobile device, such as an Apple iPad or Samsung Galaxy Tablet. Please ensure that ‘Evernote’ is installed and that you have created a free account.

Repeated as G6
B8  
**AusVELS Numeracy Assessment Made Easy - Essential Numeracy Assessment**

*Lecture*  
**Andrew Spitty - Essential Assessment, VIC**  
Years F to 10

**Commercial Presentation**  
Essential Assessment provides an easy and affordable way for Victorian Primary and Secondary schools to deliver a consistent and whole school approach to AusVELS numeracy assessment and reporting. The Essential Numeracy AusVELS Assessments have been carefully prepared adhering to the new AusVELS curriculum and reporting system. The result is a powerful set of assessment documents that can be used by classroom teachers to identify strengths, weaknesses and improvements in their students, the ability to more easily target their numeracy curriculum to their class while delivering a reportable AusVELS progression point for each of their students.

www.essentialassessment.com.au  
Repeated as E6

B9  
**Enabling Rubrics to Reveal What Would Otherwise Remain Unknown**

*Lecture*  
**Alexander (Alec) Young - Ingenious Technological Enterprises, TAS**  
Years F to 12

**Commercial Presentation**  
Alec has collaborated with schools in three states to develop a 'world first' means by which teachers obtain insights into student learning needs that would otherwise remain hidden. Teachers achieve this by using their school’s photocopier as a high speed scanner providing forensic feedback on each student’s learning, thus assisting in the development of individual learning plans for each student based on their learning needs. It can also show the teacher the nature of each student’s erroneous thinking when he/she gets things wrong. This has transformed teaching, enabling huge productivity gains.

Repeated as E10

B10  
**Mathletics: Integrating the Resources**

*Computer Workshop*  
**Lauren Anderson - 3P Learning, NSW**  
Years F to 12

**Commercial Presentation**  
This course is designed to illustrate different methods for incorporating Mathletics into your learning unit and daily lesson plans. Utilising the different resources available within the program such as Teacher Toolkit and Concept Search, teachers are shown how to introduce new concepts in a collaborative forum for discussion and review. There will also be a short introduction to our NEW interactive online Science Resource (Into Science) which is a commercial presentation for those interested.

Repeated as F10

B11  
**Musical Algebra**

*Lecture*  
**Kim Bulluss - Cognition Education, NZ**  
**Anuja Singh - Homai School, NZ**  
Years 1 to 4

Musical algebra is a practical workshop looking at patterning using untuned musical instruments. No musical experience is needed. Come along and have fun while learning some experiences to expose young children to algebraic thinking. This workshop has been extremely popular in New Zealand - so don’t miss out!

*Note: Please bring an untuned musical instrument with you.*

Repeated as A11

B12  
**Teaching Mathematics Developmentally**

*Workshop*  
**Bruce Williams - CreatingRealMathematicians.com, VIC**  
Years 3 to 8

There is a natural progression of understandings related to the teaching of mathematics. We will focus on how to teach the four operations and the developmental sequence for each and how they are all actually different ways of saying the same thing. We will investigate the mental strategies we use unconsciously every day and how to develop these skills in our students. We will provide activities to take back to the classroom as well as a formative assessment tool for recording student progress.

Repeated as A18
B13  Student Led Workshops
Workshop  Years 4 to 6
Dena Reddan - St Therese Primary School, VIC
Rick Hynes - St Therese Primary School, VIC
Luke Hindson - St Therese Primary School, VIC
Workshop would be working through the process for student led workshops. How students identify understandings and then work with a learning partner on preparing and presenting a workshop for peer learning.
Not repeated

B14  An Interactive Workshop Presenting Exciting Decimal Measurement Tasks to Enhance Student Thinking
Workshop  Years 4 to 7
Linda Cheeseman - Cognition Education, NZ
Bina Kachwalla - Cognition Education, NZ
In this interactive workshop participants will be engaging in rich tasks that present real life problems linking decimals and measurement. The content will focus on the conversions of decimal numbers and the units of measurement. Problems will be explored using a range of representations such as drawings, mathematical equipment etc. Teachers will be viewing the problem solving strategies through the lens of student thinking. Emphasis will be placed on the use of mathematical language, and the importance of mathematical justification, argumentation and reasoning. Come along to this workshop to find interesting ways to excite students learning about decimal fractions.
Repeated as A21

B15  What Secondary Teachers Would Like Primary Teachers to Know
Lecture  Years 4 to 8
Helen King - S/E Private Tutor, VIC
Despite attempts to train teachers across the ‘Middle Years’ (5-9) there are basic differences in the way primary and secondary teachers approach Mathematics. Some working habits developed in primary school have to be continually ‘hammered out’ as they pose obstacles to students' success at higher levels. These are shared. Since retiring from the classroom I have individually taught 100+ students from 30 different primary, secondary, government and private schools in outer south-east. Some distinct trends have emerged in students' basic numeracy. There seems to be a lack of understanding of two important words - the meaning of ‘division’ (as opposed to the skill in ‘doing’ division) and the meaning of ‘volume’. Ways to overcome these problems are discussed alongside many others.
Not repeated

B16  Geometry in Art and Design: Escher, the MATHOMAT and the Australian Curriculum
Workshop  Years 4 to 9
Associate Professor Susie Groves - Deakin University, VIC
This workshop will illustrate ways in which an analysis of geometry in art and design can be used to underpin a range of exciting lessons to address the Measurement and Geometry strand of the Australian Curriculum. Participants will be asked to undertake mini-investigations related to regular and homogeneous tessellations, using the MATHOMAT as a tool to aid their investigations. A particular focus will be the work of M. C. Escher.
Not repeated

B17  Cooperation in Problem Solving Between Primary and Secondary School Teachers
Lecture  Years 4 to 10
Dr Anne Prescott - University of Technology, Sydney, NSW
Julie Dupuche - DEC, NSW
There are two aspects to problem solving in the mathematics classroom - teaching through problem solving and teaching about problem solving. Teaching through problem solving means that novel, interesting and challenging problems are a natural part of mathematics, while teaching about problem solving scaffolds problem solving by providing strategies. Students need to know both aspects in order to be successful problem solvers. This presentation will show how combining the problem solving expertise of both primary and secondary teachers through cooperative planning and implementation of lessons, students see mathematics in a different light as they learn about and through problem solving.
Repeated as G14

B18  Adding to Conceptual Understanding of Some Number Topics Using Technology
Workshop  Years 5 to 7
Carol Moule, SA
Technology can be used to teach new and old ideas with real benefits for students, particularly those who find mathematics difficult to understand. The TI15 Explorer™ calculator has many features that can assist conceptual development and understanding. Participants will be given a trial version of computer software which emulates
this calculator, together with classroom ready activities which will deal with fractions, index laws and place value understanding using technology.  

Note: Bring a laptop if you have one available.  

Repeated as E19

B19  Problem Solving  
Workshop  
Daniel Avano - Museum Victoria/Scienceworks, VIC  
Simon Keily - Museum Victoria/Scienceworks, VIC  

In this session participants will work through a series of hands-on problems (real-life situations) to test out their problem solving skills. This will be followed by a discussion about practical ways of going about solving problems. Participants will then prepare their own individual problem solving checklist. It’s a great way to introduce problem solving in primary or lower secondary school. This session is based on a program available to schools at Scienceworks. Participants will also be given a quick overview of other maths resources available from Museum Victoria.  

Repeated as A24

B20  Using Extension Materials to Underpin Better Learning  
Workshop  
Ian Bull - St Kevin’s College, VIC  

Extension materials based on number concepts can be used with a range of ability groups to allow students to develop a deeper understanding of the arithmetic processes presented in a Problem Solving format. Materials that require students to apply systems of logic to the solution of challenging questions require students to think outside the square and to regard the use of arithmetic as a means to an end, rather than THE algorithm to be mastered. A range of activities will be presented which were trialled at St Kevin’s College this year.  

Note: Bring your iPad or Tablet.  

Repeated as C19

B21  Algebra as Story Telling  
Lecture  
Adjunct Professor Mike Clapper - Australian Mathematics Trust, ACT  

This presentation describes a framework for the introduction and development of algebraic thinking which develops in students the understanding that algebra is about ‘things that happen to numbers’ in a narrative context. Whilst it draws on some well-understood pre-algebraic pedagogies such as machine game and back-tracking, it develops these into a fuller picture of algebraic expression (or equation) to the story which it tells about numbers. Many examples will be given of practical activities which will allow students to use their emerging algebraic skills to explore patterns and develop algebraic thinking.  

Repeated as A26

B22  A Formula For Maths Lessons  
Workshop  
Meredith Clegg - Hume Central Secondary College, VIC  
Justine Johnston - Hume Central Secondary College, VIC  
Lisa McLeish - Hume Central Secondary College, VIC  

What is the formula for a good secondary maths lesson? For us it is a lesson structure that hooks students from the start, explicitly guides the teaching and practice, and culminates effectively with cognitive closure. This workshop will examine these components of our ‘Explicit Instruction Model’ for lesson design and our use of peer coaching in collaboratively planning the lesson, choosing an area to improve, collecting observable data and debriefing to support continuous improvement in maths teaching.  

Repeated as A27

B23  Tools for Planning and Assessment - Using the Numeracy Improvement Strategy Approach  
Workshop  
Koreena Carlton - Baden Powell College  
Nick Keating - Baden Powell College  
Sara McKee - Baden Powell College  
Erin Cole - Baden Powell College  

Baden Powell College had worked with New York Numeracy Consultants Chris Coombes and Frank Schoonderbeek as part of the Numeracy Improvement Strategy for the past 3 years. As a Middle Years team we have developed planning documents based on AusVELS inclusive of learning targets, introductory tasks, diagnostics and assessment tasks with rubrics. The planning documents have provided a strong structure to meet the individual needs of the
students through a differentiated approach. The formative assessment tasks are moderated as a team and direct and drive future planning. Some examples of planning documents, assessment tasks and conferencing tools will be provided to take away.

*Repeated as A28*

**B24** Bring Maths & Science Together

*Lecture*

*Rhonda Lyons - Warrnambool West Primary School, VIC*

I would like to share a concept map of how we can bring teaching and learning of Maths and Science together. In the spirit of holistic learning this may stimulate teachers' ideas of how to motivate and engage students.

*Not repeated*

**B25** The ABC of Mathematics. Who Needs a Maths Dictionary?

*Lecture*

*Gael McLeod - Pearson Publishing, VIC*

*Sophie Matta - Pearson Publishing, VIC*

*Commercial Presentation*

Are you a primary teacher teaching maths to the Australian Curriculum and unsure how to properly explain maths terms? Are you a secondary teacher teaching maths outside your area of expertise and need support? Do you teach student who have literacy difficulties or are EASLD students? Are you a librarian looking for accurate and informative maths reference material? Pearson has a solution to your problem. The newly published Pearson Illustrated Maths Dictionary 5th Edition has updated the 4th Edition to include the Australian Curriculum, photos, more accurate definitions, comprehensive examples, coloured tabs for easier navigation and is compatible with the Pearson Maths 7-10 student books. This book will be of enormous assistance to anyone teaching maths who is not maths trained, to students with poor English skills and parents who are out of touch with mathematical terminology. Come and find out how it may benefit you.

*Repeated as G21*

**B26** Down to Earth with Deadly Maths

*Workshop*

*Jan Cavanagh - Queensland University of Technology, QLD*

A great way to grow confidence is to begin with Reality. The RAMR cycle - Reality-Abstraction-Mathematics-Reflection will be demonstrated with measurement as the maths focus. This active learning is designed to motivate and empower under achieving students. Come prepared to get totally involved in challenging hands-on activities.

*Repeated as F26*

**B27** Animating Statistics Through Physical Activity and Simple Measures

*Workshop*

*Colin Chapman - Caroline Chisholm Catholic College, VIC*

Big data is an important artefact of our connected age. Every keystroke, click and location laden social media interaction contributes to the accumulating data that is being marshalled to inform us about global disease, political expression and consumption. Learners must understand statistics and how it packages data for understanding so that they can collect, process and interpret data to make decisions. This workshop presents small data activities for learners to learn statistical techniques using an inquiry approach. The activities use physical challenge to collect real data that participants can use to explore statistics, correlation and causation using spreadsheet programs.

*Note: Bring a charged laptop. We will be using Google Docs.*

*Repeated as A30*

**B28** Enrichment Activities for High Performing Students

*Workshop*

*Debra Brooks - Glen Waverley Secondary College, VIC*

*Donna Callow - Glen Waverley Secondary College, VIC*

Finding relevant and stimulating activities that cater for all abilities in the Mathematics classroom is a continual challenge for most time poor teachers. Of particular concern to us with our significant number of high ability and highly motivated students (within our mixed ability classrooms) are activities that enrich and enliven their experience of mathematics. We have developed a number of activities that can be used for most students within a typical classroom, but also extend further into areas of mathematics not usually encountered in secondary school. This session will be a workshop where participants can do the activities and see how they may be used within their own classrooms.

*Repeated as D27*
B29 Thinking, Creating and Understanding Workshop Years 7 to 10

Professor Derek Holton - The University of Melbourne, VIC

I will present a single ‘nice’ problem (a different one in each of my two sessions), that we will develop to show, I hope...

1. How mathematicians work;
2. How this is relevant to the curriculum; and
3. How this is relevant to students in and out of the classroom.

Repeated as E27

B30 Solving Non-Routine Mathematical Problems With Two Unknowns Lecture Years 7 to 10

Karim Noura - Bayside P-12 College, VIC

Participants will share visions and experiences of using non-routine problems in teaching and learning mathematics, especially in the area of mental computation as well as in algebra.

Repeated as E28

B31 Introducing Maths Concepts Into Game Maker Lecture Years 7 to 10

Nathaniel Bradshaw - Caroline Chisholm Catholic College, VIC

Game Maker is a computer games development platform used in many Victorian schools. This session will introduce participants to Game Maker and demonstrate strategies to teach maths concepts through the development of simple maze and platform games. Participants are encouraged to bring their own laptops if they have Game Maker installed.

Not repeated

B32 5 Minute Activities for the Middle School Classroom Workshop Years 7 to 10

Kim Streek - Manor Lakes College, VIC

Allesha Fecondo - Manor Lakes College, VIC

This session is designed for teachers to bring along their own ideas for a 5-minute activity to use in the middle school classroom. At the end of the session we will compile all of these for all candidates to take home and use in their own classrooms.

Note: Please bring a 5-minute activity to share.

Repeated as A32

B33 assessON: Assign, Monitor and Track Student Progress With Ease Computer Workshop Years 7 to 10

Evan Curnow - Jacaranda, VIC

Shirley Sharpley - Jacaranda, VIC

Commercial Presentation

Would you like to have easy access to an overview of your class’ progress? Do you want to save time setting, checking and marking students’ homework and tests? assessON is a powerful, effective online assessment tool for Mathematics. It assesses students’ readiness FOR learning, their progress AS they learn and their levels OF learning. Teachers armed with assessON are perfectly placed to undertake targeted intervention with their students. Learn how his tool can be seamlessly integrated into your classroom and how it dovetails into the Jacaranda Maths Quest 7-10A Australian Curriculum series.

Repeated as D29

B34 If Size Doesn’t Matter, Context Definitely Does Workshop Years 7 to 11

Alexandria Dowson - Guildford Young College, TAS

One of the most resistant of questions in education is why students continue to have difficulty retaining information. A possible solution to this question may lie in the fact that students struggle to link mathematics to their life. This is especially evident with students who experience poor estimation skills in mathematics. The main element of the Meaningful Measurement unit involves a housing measurement activity where the students design their dream house using estimation, scale drawing, paper models and Google Sketch-Up to create their design. The second activity in the workshop, “Left in the Car”, looks at surface area of adults and children in relation to heat loss.

Repeated as H28
B35  Modelling the World with Mathematica  
Lecture  
Brian Hodgson - Independent Consultant, VIC

Years 7 to 12
This session explores two reasons why many students meet a brick wall when introduced to algebra in the middle years: the dominance of x as a universal variable and the absence of realistic contexts. One day x can be length, next width and then area! Mathematica works comfortably with length, width and area as variable names. It also facilitates the manipulation of ‘dirty’ data typically associated with genuine modelling without compromise. Ready to use work units will be available to participants. No prior experience with Mathematica is required.

Repeated as A40

B36  Using Mathematica and CDFs - A Basic Approach  
Lecture  
Gary Bass - Macleod College, VIC

Years 7 to 12
Mathematica is provided freely to many schools through a Vic Government rollout. Very few teachers are aware of the potential for Mathematica to demonstrate mathematics concepts and provide interactive content for online on demand learning. This session will: outline basic Mathematica functions; illustrate some practical uses; demonstrate the interactive CDF and provide sources of further information about Mathematica. Participants will be provided with links to source code, basic instructions and examples of interactive CDFs.

Note: Mathematica is currently a WIN 7/8 or OSX application which uses Flash. iOS was promised in 2012 and shall be included if available. Optional: Bring laptop.

Repeated as G36

B37  Pythagoras Flirts with Lumeracy and Technology in the Aegean Sea  
Workshop  
Rama Ramakrishnan - Elsie-Rajam Private School, WA

Years 7 to 12
Mathematics has its own value and beauty and the Australian Curriculum states: Mathematics aims to instill in students an appreciation of the elegance and power of mathematical reasoning. Mathematical ideas have evolved across all cultures over thousands of years, and are constantly developing. Digital technologies are facilitating this expansion of ideas and providing access to new tools for continuing mathematical exploration and invention. The presentation will demonstrate how the Pythagorean Theorem can be presented to Middle and Upper school students with flair. It uses Lumeracy resources with the aid of contemporary computer algebra system based technology. This is not just a change in mathematics teaching but a paradigm shift in mathematics pedagogy.

Note: Please bring laptop or TI-Nspire machine with basic Navigator use knowledge.

Repeated as H29

B38  Mathematics of Oceans - Waves Sharks and Ships  
Lecture  
Paul Pascoe - St Francis Xavier College Berwick, VIC

Years 7 to 12
A lecture style presentation covering Surfing, Tsunamis, and Harnessing Wave Power. Several Algebra Equations and Graphs will be presented which are used to describe wave motion and behaviour. The mathematics of how to successfully catch waves of various sizes and speeds on a surfboard will also be discussed; as well as Surfboard Design and Geometry. The mathematics of Sharks includes the hunting patterns used by sharks, biting force of shark jaws, as well as the use of ratio and proportion to reconstruct the giant ancient shark: “Megalodon”. Some mathematical aspects of Ships sailing the oceans will also be discussed.

Repeated as H30

B39  Why Cubic Polynomial Functions?  
Computer Workshop  
Dr David Leigh-Lancaster - VCAA, VIC
Antje Leigh-Lancaster, VIC

Years 7 to 12
In this session we will consider what one might present and why one might present it in an introductory study of cubic polynomial functions and related graphs and algebra. The CAS Mathematica will be used to explore some of these considerations. Previous experience with Mathematica is not required. However some familiarity in working with mathematical software in a windows environment would be helpful.

Note: Participants should bring along a USB if they wish to be able to copy notebook files from the workshop.

Repeated as H31
A Community Engagement Approach to Improving Learners’ Access to Mathematical Sciences in South Africa

Lecture Years 7 to 12

Asaph Nkomo - Tshwane University of Technology, South Africa
Professor Willy Mwakapenda - Tshwane University of Technology, South Africa
Williams Ndlovu - Tshwane University of Technology, South Africa

Globally, the problem of limited access to school mathematics and science is not new. However in South Africa this problem is compounded by massive differences in the contexts of schools in which learners learn mathematics and science. In this paper, we report on the design and implementation of a university project that has involved different school communities to improve access to mathematics and science for Grades 10 to 12. We highlight challenges and gains experienced in the project, and discuss how a “clineK” approach to broadening access to mathematical sciences presents a sustainable way forward.

Not repeated

Overcrowding, Vampires and Other Population Problems

Lecture Years 7 to 12

Marty Ross, VIC

So many people! Billions and billions, as Carl Sagan might have said. Where will we all live? And what will happen with the arrival of the vampires? Will that create more room, or will the Earth then simply be overcrowded with billions of vampires? In this presentation Marty will look into the mathematics of population growth, and he’ll consider just how many people the Earth might be able to sustain. He’ll also present some important research on the ever-looming threats of vampire and zombie infestation.

Not repeated

TI-Nspire for Mathematical Methods

Lecture Years 9 to 12

Sanjeev Meston - Hillcrest Christian College, VIC

Maximising the use of TI-Nspire CAS technology for VCE Mathematical Methods course. This session is designed for regular and advanced users of the TI-Nspire CAS technology. Focus will be on important aspects and salient features of all CAS applications and tools that often are overlooked and not used in the classroom for the CAS enabled component of the VCE Mathematical Methods course.

Note: TI-Nspire handheld or iPad application of the TI-Nspire or the Teacher Edition on Laptop.

Repeated as E39

Analysis Tasks for VCE Mathematics 2014 and Beyond

Lecture Years 10 to 12

Allason McNamara - Mount Scopus Memorial College, VIC
Dr Philip Swedosh - King David School, VIC
Dean Lamson - Ballarat Clarendon College, VIC

Allason, Philip and Dean have designed a number of new Analysis Tasks which can be attempted by VCE Mathematical Methods CAS and Specialist Mathematics students and interested teachers and younger high achieving students. These have been designed so that students and teachers can apply their mathematical knowledge to analyse, investigate, model and solve problems in a variety of situations. One of the tasks is called Lacsap’s Triangle and another involves Proof and Number from the new Specialist Mathematics Australian Curriculum course. Other tasks will involve content from the VCE Areas of Study: Functions, Relations and Graphs, Algebra, Calculus and Probability. These tasks have been developed using Mathematica but can be adjusted to suit other Computer Algebra Systems.

Repeated as A49

Assessment Tasks in Senior Mathematics Using the Colour Casio ClassPad

Workshop Years 10 to 12

Maria Schaffner - Penleigh and Essendon Grammar School, VIC
Cathy Devlyn - Fintona Girls’ School, VIC

In this session we will explore assessment pieces for senior level mathematics using the Casio ClassPad 400. Past VCAA exam questions, SAC ideas and test questions will be presented and there will be opportunity to work through these questions using the new colour ClassPad 400.

Note: New colour ClassPads will be provided.

Not repeated
B45  Modules and Videos for the Senior Curriculum
Lecture  Years 11 to 12
Dr Michael Evans - Australian Mathematical Sciences Institute, VIC
Twenty-five modules for Year 11 and 12 teachers have been developed. They deal with topics in functions, coordinate geometry, probability and statistics. They are written for teachers and provide coverage of topics in the Australian Curriculum but many of these topics are in state and territory curriculum now. The resources are web based and free. These modules follow on from the modules developed by AMSI for the F-10 curriculum that are available through SCOOTLE. Videos of applications of Mathematics are included.
Repeated as A52

B46  Four Interesting and Useful Theorems About Polynomials
Lecture  Years 11 to 12
John Kermond - John Monash Science School, VIC
Four little-known theorems involving polynomials that have interesting and useful applications in the typical senior secondary school mathematics curricula are stated, proved and illustrated with examples. The theorems, proofs and examples provide ideas that could be applied to many types of assessments including School Assessed Coursework.
Repeated as G48

B47  General Continuous Random Variables
Lecture  Years 11 to 12
Stephen Swift, QLD
While the normal distribution is familiar to senior maths teachers, the general underlying concepts may be less familiar. These concepts form an important part of the national Mathematical Methods course in Year 12. Year 11 teachers should also be familiar with the concepts. In this workshop, participants will work through the theory covered in the national syllabus, including the appropriate use of CAS calculators. Calculators are used to carry out tedious integrations so that participants can focus on the important points.
Note: Participants should bring a CAS calculator to obtain maximum benefit.
Not repeated

B48  VCE Maths and the Virtual Learning Network
Computer Workshop  Years 11 to 12
Kyle Staggard - Bendigo Senior Secondary College, VIC
Stuart Payne - Bendigo Senior Secondary College, VIC
Students of VCE Specialist Maths and VCE Maths Methods CAS Units 1 to 4 have successfully completed these courses entirely online over the last 2 years, through the Virtual Learning Network established at Bendigo Senior Secondary College. The details of this exciting project, including the structure and organisation, future direction, and the results of evaluations of the project will be discussed during the workshop. Participants will have the opportunity to explore the learning materials available to students through the Virtual Learning Network site.
Not repeated

B49  Activities for VCE Maths Methods 1-4
Workshop  Years 11 to 12
Christine Boyer, VIC
Commercial Presentation
Activities have been designed to fit the VCE Maths Methods curriculum. Students work either in pairs or small groups to 'play' these activities. This leads to discussions in their language and an enhanced understanding of the concepts studied. These activities also enable teachers to formatively assess where the students 'are at' and ask probing questions, again to increase understanding. The MAV is involved with the production of these materials-they may not be commercially available at this time.
Note: Please bring VCE calculator to this session.
Repeated as F49
Having started work as a high school science and maths teacher, Helen Keates graduated as a veterinarian in 1981. She has since been teaching students in the Veterinary Science program at the University of Queensland for 30 years, progressing from clinical tutor to Senior Lecturer. Her research interests include novel anaesthetic agents, pain management in lame horses, compassion fatigue in animal shelter workers and more recently, identifying the incidence and types of errors made by students calculating drug doses. In 2009, she received a UQ Excellence in Teaching Award and in 2012 a National Citation for contribution to student learning.

Professor Hughes-Warrington is Deputy Vice-Chancellor (Academic) at the Australian National University. Her work takes her across many domains, from innovative degree design and education business improvement, to ANU participation in edX and the $50 million Tuckwell gift for student scholarships. Professor Hughes-Warrington is an active researcher in philosophy, history and education. She has published six books and been in awarded $18 million in grants. Professor Hughes-Warrington has been the recipient of a number of fellowships, prizes, awards and honours, including a 1992 Rhodes Scholarship, the 2008 Prime Minister’s Award for University Teacher of the Year, and the 2013 University of Tasmania Foundation Graduate Award.

Students need to experience a variety of addition and subtraction problems and as teachers we need to be aware of complexity and difficulty that can occur due to the language and the structure of the problem presented. During this session the different types of addition and subtraction problems will be highlighted and ways to support students to interpret and solve the problems explored.

Using activities and games to make links between the Proficiency Strands and teaching mathematical concepts and skills in your classroom.
C5  A Journey with Professional Learning Communities  
Lecture  
Bev Thompson - Thomas Chimside Primary School, VIC  
Laurel Smith - Thomas Chimside Primary School, VIC  
This session will present the journey of Thomas Chimside Primary School to establish Professional Learning Communities with the aim of building teacher capacity in the teaching of mathematics. It will also look at how this leads to intervention that can contribute to improving student learning outcomes.  
Not repeated

C6  MAV Maths Talent Quest (MTQ) - Mathematics Investigation Projects  
Workshop  
June Penney - MAV Student Activities Committee, VIC  
Kelly Gallivan - St Kevin’s College, VIC  
The Maths Talent Quest (MTQ) continues to be an important component of the MAV’s student activities program. It has been running for over 30 years and involves students engaging in personally chosen ‘real life’ maths investigations. The categories include all Primary and Secondary year levels and the investigations may be performed by individuals, groups or classes. Certificates and prizes are awarded while some investigations are also selected to represent Victoria in the National MTQ. Do you want to find out more about the MTQ and how it links to the curriculum? Do you have a personal interest or do you want to find out how to run it at your school? Come join us to discuss process, ideas and to view past investigations.  
Repeated as D7

C7  Introducing the HP Prime Graphing Calculator  
Workshop  
Dr Chris Longhurst - Australian Catholic University/Hewlett Packard, NSW  
Commercial Presentation  
In this workshop I will introduce the new HP prime calculator, the first touchscreen calculator. This calculator is a very powerful tool for teaching and learning mathematics. I will introduce the HP prime showing its main features and how it can be used to enhance teaching and learning. I will provide worksheets and investigation activities. Come along and be amount the first in Australia to see thus innovative cost effective technology.  
Repeated as G9

C8  Incorporating Drama in Maths Lessons  
Lecture  
Siu Marn Lee - Fairfield Methodist School (Primary), Singapore  
Lee Choon Nga - Fairfield Methodist School (Primary), Singapore  
During this session we will share how we incorporated drama in a Primary Two lesson on fractions. We will also show a video clip of the lesson as well as share how effective the approach was.  
Repeated as F11

C9  A Bucket of Maths - Water By The Numbers  
Workshop  
Heath Graham - Global Education Project, VIC  
Marilyn Snider - Global Education Project, VIC  
Will you water your garden, feed your chickens, or go to school today? How much water does your family use in a week? Do water filters save lives? How much water is there in the world? The Global Education Project will present an interactive workshop demonstrating a range of teaching activities for the Primary classroom relating to water and maths. This session, inspired by the International Year of Water Cooperation, will include free resources and lesson plans for all participants.  
Repeated as D10

C10  Measuring Progress in School Improvement with the Progressive Achievement Tests Maths (PATMaths)  
Lecture  
Julia Inglis - Australian Council for Educational Research (ACER), VIC  
Commercial Presentation  
The ACER Progressive Achievement Tests Maths (PATMaths) are Australian normed tests designed to provide objective information to teachers about the level of achievement attained by their students in the skills and understandings of mathematics. The tests are available in both print and online format. This presentation will focus on ways that PATMaths data can be used to identify specific areas of need in mathematics learning for individual students and whole classes. The presentation will also show delegates how, by using PAT Maths they can:  
◊ Provide meaningful achievement data for schools, districts and education departments for analysis and discussion
Help inform teaching practice
Evaluate effective teaching methods across achievement bands
Inform the targeted use of resources
Track progress across year levels

Not repeated

C11 Being Mathematicians: Teaching and Learning Through Problem Solving and Reasoning
Lecture

Rhys Coulson - Serpell Primary School, VIC
Robert Smart - Thomas Mitchell Primary School, VIC

This workshop will explore the exploration of an 18-month professional learning program between two primary schools and a university researcher; with the aim of developing pedagogical content knowledge by encouraging students to think of themselves as mathematicians. This is being done through tasks that take problem solving as the entry point into the number aspects of the primary curriculum and pedagogies that explicitly attend to student reasoning. We will outline the professional learning model, present the ideas and research behind this approach to teaching, share some of the experiences of teachers developing this in their classrooms and consider the issues for curriculum and staff development.

Repeated as D12

C12 Language in Mathematics Learning
Lecture

Emeritus Professor Philip Clarkson - Australian Catholic University, VIC

The Australian curriculum now recognises the importance of language in mathematics learning, although that recognition is still perhaps on the periphery. Participants in this session will be introduced to a 'language use model' for teaching mathematics, that can be used both in planning and implementing mathematics lessons that will highlight important aspects of language. As well many schools, both rural and urban, have students who come from families who speak a non-English language at home. This provides for these ELL students both difficulties and opportunities, as it does for the rest of their class. The session will also touch on some research carried out with Australian urban bilingual students, and as a contrast some examples from PNG and other countries where English is always a second language.

Not repeated

C13 Using the Real World to Engage Our Students
Workshop

Stephen Cox - Melton West Primary School, VIC
Anna Kapnoullas - Melton West Primary School, VIC
Liza Dearing - Melton West Primary School, VIC
Natalie Edwards - Melton West Primary School, VIC

The real world offers many opportunities to connect our students. We will show examples of how students became more engaged as we linked concepts to real world maths including sports, advertising and finances. Based on research, student learning is enhanced when activities engage the student. This presentation highlights how we at Melton West Primary School have improved student engagement through using real life topics. Making the mathematics relevant to our students allows them to connect with the real life and has improved their confidence. Our presentation offers many examples on ideas you could use to engage your own students.

Repeated as D13

C14 Teaching Fractions Developmentally
Workshop

Bruce Williams - CreatingRealMathematicians.com, VIC

Fractions remain a mystery to most students, while the teaching of fractions is daunting to many too. We want to allow access and success for ALL students in all of mathematics, including the “mystery” of fractions. Your students will absolutely understand fractions in a couple of simple engaging lessons. Teaching Fractions developmentally involves no GCF’s or LCM’s, nor are there any “rules” to remember! This approach develops a complete understanding of all four operations with fractions that students enjoy and understand. “When I try to remember a rule, I forget that rule. When I understand, I can never un- understand”.

Repeated as D14
If students are to reason mathematically, we need to engage them in mathematically rich, investigative tasks that allow them to explain their thinking, justify the strategies they use and the conclusions they reach, and adapt the known to the unknown. The importance of contextualised learning will be highlighted so students may be encouraged to transfer their learning from one context to another, explain their choices within a context, and compare and contrast related ideas. The reasoning proficiency naturally interrelates with the understanding, problem solving and fluency proficiencies.

**Not repeated**

**C16 Exploring 3-D Geometry from Scratch**

Workshop  
*Dr Brian Doig - Deakin University, VIC*

Participants will use simple tools (pencils, scissors) to explore some three-dimensional solids based on tessellations. No knowledge of geometry is needed but a willing pair of hands to ‘give it ago’! All materials will be supplied but participants are urged to bring their own scissors and their favourite sharp black-lead pencil. All constructions are suitable for taking home flattened.

**Repeated as G13**

**C17 Mathematical Opportunities**

Workshop  
*Sharyn Livy - Mathematical Association of Victoria, VIC*  
*Dr Tracey Muir - University of Tasmania, TAS*

As teachers we are constantly looking for ways in which we can provide students with mathematical opportunities to engage in purposeful and authentic learning experiences. On a daily basis we need to select teaching content and approaches that will motivate and challenge our students. This requires a level of knowledge that extends beyond content, to pedagogy and learning styles. In this seminar we will provide some examples of mathematical opportunities and how teachers can capitalise on these opportunities in their own classrooms to engage and challenge students.

**Repeated as D17**

**C18 Insights Into The Problem Solving Procedures**

Workshop  
*Wong Oon Hua - Nanyang Technological University/National Institute of Education, Singapore*  
*Chai Gek Mui - South View Primary School, Singapore*

This study analyses the problem solving procedures of a sample of grade 6 students. The different procedures, both successful and less successful, will be analysed and discussed. Examples will be used to illustrate and clarify the different procedures used by the students. The procedures will be categorized using Polya’s problem solving framework and some observations will be shared. Implications for learning and teaching will be discussed. Some background literature in problem solving will be shared to better understand the procedures adopted by the students in problem solving.

**Repeated as D18**

**C19 Using Extension Materials to Underpin Better Learning**

Workshop  
*Ian Bull - St Kevin’s College, VIC*

Extension materials based on number concepts can be used with a range of ability groups to allow students to develop a deeper understanding of the arithmetic processes presented in a Problem Solving format. Materials that require students to apply systems of logic to the solution of challenging questions require students to think outside the square and to regard the use of arithmetic as a means to an end, rather than THE algorithm to be mastered. A range of activities will be presented which were trialled at St Kevin’s College this year.

**Note: Bring your iPad or Tablet.**

**Repeated as B20**
C20  Linking the Australasian Problem Solving Mathematical Olympiads and the Australian Curriculum Proficiencies

Workshop  Years 5 to 8
  Dr Anne Prescott - APSMO Inc, NSW
  Jon Phegan - APSMO Inc, NSW

Commercial Presentation
This workshop introduces the APSMO Maths Olympiads Program and its benefits in terms of the proficiency strands of the Australian Curriculum. The Olympiads consist of a series of five contests aimed at increasing mathematical problem solving and reasoning skills and as a result the enhancement of students’ enjoyment and enthusiasm for mathematics. (APSMO Inc is a not-for-profit organisation.)

Repeated as D19

C21  Analysing Students’ Result Through Conditional Formatting Using Excel for Early to Middle Years Mathematics

Computer Workshop  Years 5 to 10
  Iqbal Hossain - The Grange P-12 College, VIC
  Rudy Birsa - Williamstown High, VIC

The effective incorporation of electronic based resources and tools allow teachers to save time for both assessment and reporting. The use of Excel is one of the best and simplest applications for this purpose. This session is designed for the beginner ICT user and specifically focuses on rubric based assessments. Any year level teacher can use these tools for ongoing assessment. We will use MS-Excel as a tool for maintaining assessment results and more importantly we will demonstrate how the use of conditional formatting can be used for the customisation of assessment records. An example of a typical analysis of students’ results will also be included.

Note: Participants should bring a USB stick (a laptop is optional).

Repeated as E20

C22  How We Tripled Student Mathematics Growth Through Effective Use of Student Data

Lecture  Years 5 to 12
  Lachlan Yeates - Warracknabeal Secondary College, VIC
  Sara Graf - Warracknabeal Secondary College, VIC

In 2012 Warracknabeal Secondary College starting combining standardised test data with the ‘diagnose and intervene’ method of teaching, and achieved some astounding results. This presentation will discuss how to get the most out of your test data, provide some formatted Excel workbooks to effectively manage and analyse your data, and will discuss the future directions for the program.

Repeated as D23

C23  Promoting Mathematics Learning and Teaching Through Employing Forensic Science (Ear Printing) as a PBL Device

Workshop  Years 5 to 12
  Dr Ahmad Samarji - Victoria University, VIC

This session will focus on employing forensic science (ear printing) as a problem-based learning (PBL) device to promote mathematics learning and teaching. The session will be approaching Measurement using a forensic PBL setting. The lesson explored will be suitable for Upper Primary Level with extensions which further develop the lesson to various secondary levels - up to VCE. The aim of the session is to showcase an efficient and powerful pedagogical approach to teach a mathematics topic (Measurement) in a highly interesting and engaging environment which connects to real-life situations and scenarios. Promoting students’ critical thinking and problem solving skills will be amongst the desired outcomes of this approach.

Repeated as F25

C24  Fun With Plane Shapes and Paper Folding

Workshop  Years 6 to 8
  Darren Brett - Tara Anglican School for Girls, NSW

Paper folding can be used to investigate the properties of plane shapes. In this presentation we will be focusing on the rectangle, square, trapezium and parallelogram. The session will finish by creating an interesting design which will be enjoyed by your students. This activity is also a great ‘Friday afternoon filler’, where the students will be kept busy... and learn at the same time!

Repeated as E24
C25  Arithmetika is Now on the Web  
Computer Workshop  
Tony Allan - Daramalan College, ACT  
Commercial Presentation  
After many years of development and trials, Arithmetika is moving to the cloud. The internet allows Arithmetika to engage parents, students, teachers and tutors simultaneously so everyone can invest in a student's education, with access from any device - computer, tablet or smartphone. This means you can help your students engage in formative assessment wherever they are and dramatically improve homework response. All of this has been based on the Windows based version of Arithmetika, so it is tried and tested and easily understood by your students. Come to one of the workshops to see for yourself!  
Not repeated

C26  ABS Products Supporting Deeper Statistical Understanding: Entry Points to the Australian Curriculum  
Lecture  
Vivienne McQuade - Australian Bureau of Statistics, VIC  
In today's information-rich society, being statistically literate has never been more important for students. Broadening their statistical knowledge will enable them to engage in discussions and decision-making processes with authority, accuracy and integrity. Statistics and Probability is a strand in the Australian Curriculum (AC) Mathematics and a sub-element of the general capabilities (numeracy). While the cross curriculum priorities are often issues that grab peoples' attention, let's recognise that often it is the statistics that inform these issues. We want students to accurately understand, interpret and evaluate the data that inform these issues. In this session, ABS resources will be profiled as authentic entry points to the teaching of statistics within the AC.  
Note: Participants are encouraged to bring a laptop or tablet to follow exploration of the ABS and Education Services websites.  
Repeated as E29

C27  Consumer Classroom - Developing Practical Numeracy Skills Through Consumer Education  
Lecture  
Roslyn Mullins - Consumer Affairs Victoria, VIC  
Explore context-based learning through some of the many practical numeracy activities from Consumer Affairs Victoria's free Maths resource. Consumer activities, including shopping, paying bills and understanding unit prices, provide a broad and relevant context for students to learn, apply and consolidate their numeracy skills. Learn how our Maths resource can assist in meeting numeracy outcomes in the curriculum and discover ways to engage your students with interesting, fun and relevant maths activities that have an everyday application.  
Repeated as F28

C28  What's an English Teacher Doing in a Mathematics Classroom?  
Lecture  
Dr Ray Williams - St Mark's Anglican Community School, WA  
This session will outline the exciting consequences of seriously integrating Mathematics and English by a teacher from each discipline as part of bigger pedagogical project. Key areas of the English Curriculum of Picture Books, Poetry Analysis, Satirical Story and a Novel were explored in the mathematics classroom providing unexpected and eye-opening results for both teachers involved.  
Repeated as G29

C29  From Geometry to Algebra with Polygons  
Lecture  
Andrea Van Graan - St Mark's Anglican Community School, WA  
This session will look at how facilities on the CAS calculator can be used to help students investigate internal and external angles of polygons. Interactive notes and spread sheets will be used to help students discover the rules and patterns involved.  
Repeated as H25

C30  Autograph for Year 7-10 (Laptops and Mobiles)  
Lecture  
Douglas Butler - ICT Training Centre (Oundle), UK  
Commercial Presentation  
Autograph is now available on both laptops and iPads. The tablet version, still evolving, is being designed from scratch to maximize the benefit of the touch environment and its built-in camera. This session will show how Autograph's friendly operation, coupled with fascinating resources on the web, can be used to add dynamic content directly in the classroom or in easily recorded 'flipped' lessons. Year 7-10 topics to be covered from the new
Curriculum include: Number/Algebra (linear/non-linear relationships), Measurement/Geometry (trigonometry), and Statistics/Probability (data representation/interpretation).

**Note:** Bring your laptop or iPad (or both!). Software will be provided or easily downloadable.

Repeated as G31

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**C31 Constructing Animated Proofs Using Dynamic Geometry Software**

**Computer Workshop**

Dr Wee Leng Ng - National Institute of Education, Singapore

Dynamic geometry software (DGS) refers to computer programs which allow one to create and then manipulate geometric constructions. Many DGS packages offer graphing utilities as well. DGS, which is suitable for implementation in a discovery-learning environment or for demonstration purposes, is particularly common in secondary school geometry classrooms. In this workshop, we shall explore the use of DGS in constructing animated geometric proofs. The DGS used in this workshop is the TI-Nspire CAS Teacher Software.

Repeated as A39

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**C32 Positive Education in the Mathematics Classroom**

**Lecture**

Stephen Andrew - Geelong Grammar School, VIC

This presentation will explore the possibilities for using Positive Education principles and practices in the Mathematics Classroom. It will focus on practical applications that have been found to work.

Repeated as G37

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**C33 Engaging Learners Through Mini Whiteboards**

**Workshop**

Peter Mein - Methodist Ladies' College, VIC

Tracey Blunden - Methodist Ladies' College, VIC

This hands-on workshop will explore, demonstrate and have opportunities for discussion on the use of some great ideas on how to engage students using the mini whiteboards. These are simple ideas that will get all students participating in the lesson, learning to explore and 'play' with maths and showing their thinking. Teachers gain immediate feedback on student understanding, so that issues can be quickly addressed. They can be used to improve fluency of skills, students’ approach to problem solving and improve student's capacity to be more resilient in the face of challenge.

**Note:** Please bring a whiteboard marker.

Not repeated

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**C34 Multiple Representations: Using Egyptian Fractions as an Extended Activity**

**Lecture**

Dennis Fitzgerald - Siena College, VIC

Phillip Knight, VIC

There are advantages in presenting concepts to students in a number of ways and there are also similar benefits in having students investigate a concept using a number of representations. This session will use explore this through the example of using Egyptian Fractions as a way of teaching fraction operations, algebra and problem solving using an open-ended investigation? Participants will get the opportunity to trial some of the approaches and to review other examples.

Repeated as F35

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**C35 South African Learners’ Participation in Mathematical Sciences: Global Players or Local Observers?**

**Lecture**

Williams Ndlovu - Tshwane University of Technology, South Africa

Professor Willy Mwakapenda - Tshwane University of Technology, South Africa

Asaph Nkomo - Tshwane University of Technology, South Africa

In this presentation we report on an activity in which South African learners were asked to describe how they would introduce themselves at a mathematics and science camp which involved learners from other countries. In the presentation we show how learners’ responses reflect specific contexts of their learning of mathematics and science. We show that although mathematics and science are global disciplines, only few learners are able to view their participation in a global way. We conclude that these responses reflect limited ways in which learners have actually been introduced to mathematics and science, a limitation that the new curriculum needs to address.

Not repeated
C36  The Maths of Planet Mars  
Lecture  
Marty Ross, VIC  
This year we’re all keenly celebrating The Maths of Planet Earth. But what about Mars? What mathematics might Martians get up to? Would it be like ours, or might Martian maths have its own particular flavour? In this presentation Marty will consider what might be truly universal about mathematics, and what might be very special to us Earthlings.  
Not repeated

C37  Learning Experiences with Quadratic Function and Curve  
Lecture  
Yew Fook Chan - School of the Arts, Singapore  
The workshop session is on the topic of Graphs of Quadratic Function. Teachers will gain an understanding on the rationale and considerations in designing appropriate learning experiences for students and obtain ready-made learning experiences lessons for immediate use. Students will have opportunities to:  
a) Show graphically the relationship between the area of a circle and its radius and explain that the relationship is a function, but not a linear function.  
b) Use a graphing software or calculator to study how the shape of the graph for $y = ax^2 + bx + c$ changes when either $a$, $b$ or $c$ varies.  
Note: Please bring TI-Nspire Graphing Calculator, if you have one, to receive and download the TNS files that will be provided by the presenter.  
Repeated as G39

C38  One School’s Approach to Improving Student Results on Extended Response Questions and Worded Problems  
Lecture  
Samantha Horrocks - Werribee Secondary College, VIC  
Angela Callea - Werribee Secondary College, VIC  
This session will illustrate one school’s journey with regard to improving our students’ ability to tackle worded problems. The session will introduce the idea of the reciprocal teaching method and how the school has adapted this process to cater for students from Year 7 to 12. The session will focus on a general approach for students and on our adapted and trialled approach for VCE Mathematical Methods and IB Maths students. The introduction of these methods is producing dramatic changes in our students’ comprehension and results!  
Not repeated

C39  Biggest Loser - Gambling  
Lecture  
Robert Money - Victoria University, VIC  
Donald Smith - Sunshine House, VIC  
We will outline a unit of work that covers the probability content of the Year 9 curriculum through activities that highlight the long term expectation of losses in forms of gambling, in particular in sports betting and on poker machines. Various cross curricular efforts have been made to address this social issue and it is time for mathematics teachers to share the responsibility and to provide their unique quantitative perspective. We aim to do this without promoting ‘winner’s excitement’ or the accessibility of on-line gambling.  
Note: Bring a memory stick - for word and excel files.  
Repeated as D38

C40  Using ABS CensusAtSchool Database for Teaching Statistics on the TI-Nspire  
Workshop  
Russell Brown - Educational Consultant, VIC  
A hands-on session that covers the downloading of data from the ABS CensusAtSchool database and using this data to cover many aspects of the Middle School, General Mathematics and Further Mathematics courses on any TI-Nspire platform. Areas covered will include categorical, including split categories, univariate numerical data analysis, including parallel boxplots, and a full coverage of bivariate data analysis including residual analyses. The ABS database is an ideal starting point for many assessment tasks.  
Note: TI-Nspire calculators will be available for this session.  
Repeated as F40

C41  Pascal’s Triangle and The Binomial Theorem  
Lecture  
Geoffrey Menon - Camberwell High School, VIC  
The arithmetic triangle (named Pascal’s triangle by Fermat) has been an object of mathematical interest for over one thousand years. From Omar Khayyam and the binominal theorem, through combinations, distributions and
fractals we explore some of the remarkable properties of this extraordinary mathematical object.  

Note: There is some mathematical content in this talk.  

Repeated as D39

C42 Further Maths Examinations This Year: How Was the CAS Calculator Useful?  
Workshop  
Years 10 to 12  
Kevin McMenamin - The Peninsula School, VIC  
This session will look at questions from this year’s papers and discuss how useful the CAS calculator was in determining their answers. The ideas of pre-programmed material and hints that should be recorded in the bound reference to assist calculator functionality will be addressed. The session offers a hands-on experience that will give you the opportunity to use the calculator just like the students. Time will also be given to identifying the questions that are time consuming in calculator use and would be better done by other means. The session is open to Ti-Nspire and ClassPad users and the featured calculator will be the Casio ClassPad.  

Note: Bring along your own calculator. Some ClassPads will be available for loan.  

Repeated as E43

C43 Creating and Using eActivities in the Upper School  
Workshop  
Years 10 to 12  
Charlie Watson - The Tuition Centre, WA  
The incredible flexibility and diverse applications of eActivities created and stored on a ClassPad is often overlooked by many teachers. The aim of this workshop is to share and demonstrate some existing types of eActivities and then for participants to develop their skills in creating and using eActivities to pass on to their students. A reasonable working knowledge of either the old or new ClassPad will be assumed to keep up with the hands-on activities, but if you’re new to the technology, just come along, sit back and see what’s possible. Demonstrations will use the new ClassPad fx-CP400 CAS calculator.  

Note: Bring your own new model ClassPad handheld or emulator if possible, but there will also be loan models to borrow.  

Repeated as E43

C44 Demonstration of Maritime Engineering Maths in Schools Microsite for Teachers and Students  
Lecture  
Years 10 to 12  
Dr Walid Amin - Australian Maritime College, TAS  
Commercial Presentation  
With a major reduction in the number of students studying pre-tertiary mathematics, we attempt to motivate and inspire students to continue with their mathematics studies. A new interactive website and package has been developed for both students and teachers, which includes real world applications of integral calculus, differential equations, trigonometry and data analysis, all linked to the current mathematics curriculum for Australian Years 9 to 12. Our presentation will include how to use the new maths in schools microsite to enhance your student’s learning in your classroom.  

Repeated as F42

C45 Furthering Use of Mathematica as a CAS Tool  
Lecture  
Years 10 to 12  
Brian Hodgson - Independent Consultant, VIC  
The use of Mathematica as a CAS tool in Mathematical Methods has been consolidated by the VCAA trial being conducted in which students submit their examination responses directly via a Mathematica workbook version of their examination. Mathematica is a permitted CAS tool for all VCAA Mathematics examinations so why not use it in Further Mathematics both as a teaching tool and in student assessment? This session will illustrate how effectively Mathematica can be used to answer the 2012 papers and the power it has to assist teachers in presenting the Further Mathematics course. No prior experience with Mathematica is required.  

Repeated as G45

C46 Interactive Diagrams to Assist Mathematical Understanding  
Lecture  
Years 11 to 12  
Dr Ian Lowe - The Mathematical Association of Victoria, VIC  
Ian has produced hundreds of interactive diagrams using MS Excel, to match almost all of the topics in these VCE courses: Foundation Maths, General Maths, Mathematical Methods 1&2 and 3&4, and Further Mathematics. (Specialist Maths is under construction.) These will assist you to present the mathematical ideas clearly and your students to review the ideas in their own time. The spreadsheets are not just rows and columns; instead they assist understanding through diagrams that respond to the student’s input. A selection will be demonstrated covering a cross-section of content and levels. Commercial (MAV product)  

Not repeated
C47  Quadratics, Straight Lines, Cubics, Tangents and Areas
Workshop  Years 11 to 12
  Raymond Rozen - RMIT, VIC
  Shirly Griffith - Jacaranda (Wiley & Sons Australia), VIC
Commercial Presentation
In this hands-on session several activities will be investigated using TI-Nspire. These include finding the area and volume bounded by a parabolic region and finding the area between a parabola and straight lines. We will also find tangents to a cubic and find the areas between these tangents and the cubic. Some very interesting and surprising results will be established. These activities will be demonstrated using TI-Nspire, however they are suitable for any CAS.
Note: Please bring along your TI-Nspire handhelds, laptop or even iPads with TI-Nspire installed.
Repeated as H41

C48  Introduction to Computer Aided Assessment of Secondary School Mathematics Using MapleTA
Computer Workshop  Years 11 to 12
  Professor Bill Blyth - Australian Scientific & Engineering Solutions (ASES) and RMIT University, VIC
  Dr Asim Ghous - Australian Scientific & Engineering Solutions (ASES), NSW
Commercial Presentation
MapleTA is the major Computer Aided Assessment system for courses using mathematics. MapleTA has very many features and (invisible to the student) uses Maple as its Computer Algebra System, CAS. MapleTA keeps full records of student results and communicates directly with most Learning Management Systems. Large banks of routine questions are freely available. Some questions with advanced graphics, multiple parts and testing Higher Order Thinking Skills will be shown. Participants are invited to bring their own laptop; with internet connection, they’ll be encouraged to work collaboratively (in small groups) on some calculus MapleTA assignment or to author a MapleTA question.
Note: Bring your own laptop with wireless internet - fully charged.
Repeated as G50

C49  Computer Generating Random Maths Worksheets with the Entire Correct Notation
Lecture  Years 12 to 12
  Robert Rook, TAS
Commercial Presentation
Tired of wasting time generating senior maths worksheets, or trying to insert all the correct symbols in the questions and answers. Suitable for all 3 Year 12 maths classes. You will receive a FREE copy of software to generate your own revision sheets, and Homework booklets. The software comes with randomness built in so you generate an infinite number of worksheets and booklets.
Repeated as D48

SESSION C-D: 2:30pm-4:50pm Thursday 5th December

C-D1  Nine & Over: Adventures in Place Value
Workshop  Years K to 6
  Douglas Williams - Black Douglas Professional Education Services, VIC
The workshop includes a range of rich, revisitable activities designed to continuously develop Place Value, rather than ‘doing it’ in a block for two or three weeks. This approach more closely reflects the evolution and discovery of Place Value through mathematical history by creating a student-centred investigative environment. Hands-on activities, largely drawn from Calculating Changes, and software from Maths300 will be used in ways which may be new to some teachers. Problem solving situations and the concept of working like a mathematician will be central. Samples of children’s insights into understanding operations will be included.
Not repeated

C-D2  Why do I Need to be SunSmart?
Workshop  Years 1 to 3
  Kate Flack - Warragul Primary School, VIC
  Tony Flack - Gippsland Regional Office/Morwell Park Primary School, VIC
This was the question asked by my grade 1 and 2 students. My response? “Let’s find out!” In helping them find out the answer to this question I found out that investigating weather data is an engaging way for students to make a connection between maths and their life worlds. The question could not be answered and deeply understood without the help of maths that was relevant to students at all development levels. Whilst maths was the content focus of this inquiry, we made natural links into literacy, personal learning and science. In this interactive session participants will explore some of the activities Kate used with her class.
Repeated as F-G4
C-D3  Using Excel to Create Statistical Displays  
**Computer Workshop**  
Mary-Anne Aram - Australian Bureau of Statistics, VIC  

The ability to create statistical displays with and without digital technologies is expected in the Australian Curriculum from Year 3 upwards. Students who efficiently use technology to create graphs are equipped to undertake rich statistical investigations. In this hands-on session, participants will learn how to construct frequency tables using the countif function and then use these to construct bar charts and histograms, pie graphs, picture graphs and dot plots. A tool for drawing box plots will also be shown. Authentic data will from the CensusAtSchool questionnaire be used. The session is suitable for teachers with beginner level Excel skills.  
*Repeated as F-G6*

C-D4  New Technologies, New Representations, New Opportunities: iPad Maths  
**Workshop**  
Dr Stephen Arnold - T3 Australia, NSW  

Touch-based technologies like the iPad offer exciting new possibilities for the teaching and learning of mathematics. A key focus of this session will be algebraic thinking, and we will explore together some of the powerful and exciting new opportunities that are offered by the new tools now reaching our classrooms, with a particular focus upon the new TI-Nspire iPad app.  
*Note: Bring your own iPad with TI-Nspire App OR laptop with TI-Nspire software.*  
*Not repeated*

C-D5  Encouraging Disengaged Mathematics Learners: The EMPower Program from Years 7 to 11  
**Workshop**  
John Lawton - Objective Learning Materials, VIC  
Richard Korbosky - ECU/MAWA, WA  
Kellie Knoblauch - All Saints’ College, WA  
Gala Ferrari - Westall Secondary College, VIC  

The EMPower metric program builds understanding through contextualised lessons that engage all students in a classroom. This series gives teachers of non-traditional mathematics programs a well written, flexible and comprehensive resource. Performance understanding is required as students work collaboratively on numeracy foundation concepts in real world settings. Richard Korbosky will give participants hands-on experience with an EMPower lesson. The workshop concludes with discussion with Gala and Kellie about their outcomes from use of the EMPower program with their students at year seven at All Saints’ College in Perth and with VCAL Year 11 and 12 at Westall SC in Melbourne.  
*Not repeated*

C-D6  Hands-On Workshop for Mathematica Beginners  
**Computer Workshop**  
Craig Bauling - Wolfram Research, USA  

This introductory workshop will give attendees a hands-on opportunity to create a lesson plan in Mathematica for use within their classroom. The use of ready-made resources as well as the creation of new classroom materials will be shown.  
*Note: Feel free to bring your own laptops pre-loaded with Mathematica and/or a device to save the materials you create in this workshop.*  
*Repeated as F-G9*

### SESSION D: 3:50pm-4:50pm Thursday 5th December

DK1  The Australian Mathematics Curriculum is a Disaster  
**Keynote**  
Marty Ross, VIC  

Words cannot describe the awfulness of the new national mathematics curriculum. Nonetheless, we’ll give it the old college try. The presentation will feature violence and strong language.  
*Marty Ross is a mathematical nomad. At the age of 2, he ran away from America to join the circus. After some controversy involving an elephant he returned to America to do his PhD in mathematics at Stanford University. Marty then returned to Australia, and after lecturing at various universities he teamed up with Burkard Polster. Together they write the Maths Masters column for The Age, appear at schools, and generally do whatever they can to convince whoever they can that mathematics is beautiful and fun. Marty’s hobby is*
Students need to experience a variety of addition and subtraction problems and as teachers we need to be aware of complexity and difficulty that can occur due to the language and the structure of the problem presented. During this session the different types of addition and subtraction problems will be highlighted and ways to support students to interpret and solve the problems explored.

Repeated as C3

Using activities and games to make links between the Proficiency Strands and teaching mathematical concepts and skills in your classroom.

Repeated as C4

This session will introduce the ‘Hundred Per Cent Metric’ pattern blocks, and provide rich pedagogical support for Maths leaders to take back to their schools.

Repeated as F6

There is growing worldwide interest in Japanese Lesson Study as a model for professional learning, with large-scale adaptations of Lesson Study taking place in many countries. This presentation will describe how teachers and researchers collaborated in a Lesson Study project carried out in three Victorian schools in 2012. It will illustrate the typical Japanese structured problem-solving research lessons that form the basis for Lesson Study, and discuss how such research lessons are planned, the role of the teacher, as well as identify issues relating to the adaptation in Australia of Lesson Study as a means of professional development.

Not repeated

At Victoria University, the first year mathematics units are underpinned by the concept of Mathematics Knowledge for Teaching (MKT), a notion that involves five elements: procedural knowledge, procedural fluency and flexibility, conceptual understanding, mathematical connections and student thinking. This concept is just as relevant to teachers as it is to pre-service teachers. This workshop will examine MKT and its role in planning and implementing teaching and learning programs in schools. The specific context of number will be used and links will be made to the AusVELS Mathematics. Come prepared to do mathematics!

Repeated as G5
D7 MAV Maths Talent Quest (MTQ) – Mathematics Investigation Projects
Workshop
June Penney - MAV Student Activities Committee, VIC
Kelly Gallivan - St Kevin's College, VIC

The Maths Talent Quest (MTQ) continues to be an important component of the MAV's student activities program. It has been running for over 30 years and involves students engaging in personally chosen ‘real life’ maths investigations. The categories include all Primary and Secondary year levels and the investigations may be performed by individuals, groups or classes. Certificates and prizes are awarded while some investigations are also selected to represent Victoria in the National MTQ. Do you want to find out more about the MTQ and how it links to the curriculum? Do you have a personal interest or do you want to find out how to run it at your school? Come join us to discuss process, ideas and to view past investigations.

Repeated as C6

D8 Lock Down Numeracy
Lecture
Benji Gersh - Parkville College, VIC

I teach Numeracy to the students at the Parkville Youth Justice Precinct. It is a school within a prison. The students are the most disengaged, disenfranchised students in our state. Every day I engage them in meaningful and individualised numeracy learning experiences. I can show teachers a method of teaching numeracy that will enrich their experiences with their most difficult students, whilst enhancing their relationship with every other student. I have the secret to teaching numeracy to the ‘unteachable’ students, and enjoying it.

Repeated as F8

D9 Planet Earth: Global Issues
Lecture
Dr Ian Lowe - The Mathematical Association of Victoria, VIC

‘Global Food and maths’ is a resource compiled by MAV to encourage students to explore the foods of other cultures, and to compare these to their own. It uses some brilliant photographs (Peter Menzel) and some of its data as published in ‘Hungry Planet’. ‘Taking the worlds’ temperature’ is a secondary level resource that takes students on a journey from daily temperature observations to the super-average that is the ‘global temperature’. We see the statistical evidence of warming and its correlation with CO2 concentrations. Putting these together we can ask ‘what are the consequences of global warming for subsistence farmers?’

Not repeated

D10 A Bucket of Maths – Water By The Numbers
Workshop
Heath Graham - Global Education Project, VIC
Marilyn Snider - Global Education Project, VIC

Will you water your garden, feed your chickens, or go to school today? How much water does your family use in a week? Do water filters save lives? How much water is there in the world? The Global Education Project will present an interactive workshop demonstrating a range of teaching activities for the Primary classroom relating to water and maths. This session, inspired by the International Year of Water Cooperation, will include free resources and lesson plans for all participants.

Repeated as C9

D11 Bar Model Method for Primary Mathematics
Lecture
Dr Ban Har Yeap - Marshall Cavendish Institute, Singapore

Bar model method was introduced to Singapore schools in1980’s to counter students’ difficulties with word problems. In this session participants will see how bar models are used to help students acquire basic concepts such as fraction operations as well as to facilitate problem solving. Participants will learn about a visual tool that serves as a bridge to abstract ideas. Bar models can also be used as a strategy to differentiate instruction for students who are more visual. The bar model method also functions as a visual introduction to formal algebra.

Not repeated

D12 Being Mathematicians: Teaching and Learning Through Problem Solving and Reasoning
Lecture
Rhys Coulson - Serpell Primary School, VIC
Robert Smart - Thomas Mitchell Primary School, VIC

This workshop will explore the exploration of an 18-month professional learning program between two primary schools and a university researcher; with the aim of developing pedagogical content knowledge by encouraging students to think of themselves as mathematicians. This is being done through tasks that take problem solving as
the entry point into the number aspects of the primary curriculum and pedagogies that explicitly attend to student reasoning. We will outline the professional learning model, present the ideas and research behind this approach to teaching, share some of the experiences of teachers developing this in their classrooms and consider the issues for curriculum and staff development.

Repeated as C11

D13 Using the Real World to Engage Our Students
Workshop

Stephen Cox - Melton West Primary School, VIC
Anna Kapnoullas - Melton West Primary School, VIC
Liza Dearing - Melton West Primary School, VIC
Natalie Edwards - Melton West Primary School, VIC

The real world offers many opportunities to connect our students. We will show examples of how students became more engaged as we linked concepts to real world maths including sports, advertising and finances. Based on research, student learning is enhanced when activities engage the student. This presentation highlights how we at Melton West Primary School have improved student engagement through using real life topics. Making the mathematics relevant to our students allows them to connect with the real life and has improved their confidence. Our presentation offers many examples on ideas you could use to engage your own students.

Repeated as C13

D14 Teaching Fractions Developmentally
Workshop

Bruce Williams - CreatingRealMathematicians.com, VIC

Fractions remain a mystery to most students, while the teaching of fractions is daunting to many too. We want to allow access and success for ALL students in all of mathematics, including the “mystery” of fractions. Your students will absolutely understand fractions in a couple of simple engaging lessons. Teaching Fractions developmentally involves no GCF’s or LCM’s, nor are there any “rules” to remember! This approach develops a complete understanding of all four operations with fractions that students enjoy and understand. “When I try to remember a rule, I forget that rule. When I understand, I can never un-understand”.

Repeated as C14

D15 An Approach to Multi-Step Word Problems
Workshop

Associate Professor Marj Horne - Australian Catholic University, VIC

Two and multi-step word problems are one of the areas where students have difficulties as is shown on NAPLAN assessments. Just as the empty number line has provided many opportunities for students to advance their thinking in mental arithmetic and number calculations generally as well as being a tool that is always available so the ribbon diagrams used by our Singaporean colleagues provide a useful tool and a way of seeing worded problems. This session will be a practical one with participants exploring the use of these diagrams in tackling word problems.

Repeated as F15

D16 Integrating Learning Theories When Designing, Implementing and Evaluating Rich Mathematical Tasks
Lecture

Dr Craig Deed - La Trobe University, VIC
Stephen Cadusch - La Trobe University, VIC
Scott Dealy - La Trobe University, VIC
Chelsea Harrington - La Trobe University, VIC

Third year Pre-service teachers will share their experiences of integrating learning theories and practical knowledge when designing, implementing and evaluating rich mathematical tasks. Pre-service teachers completed a combined project within a theory based subject:

◊ Theories of Learning, and a mathematical pedagogical and content based subject
◊ Teaching Mathematics, whereby they designed a rich mathematical task and adapted this in light of theories relating to deep learning and critical thinking, student autonomy, self regulation, metacognition, and personalised learning.

The Pre-service teachers implemented their task whilst on practicum, and evaluated the effectiveness of the task in terms of their students’ responses. This session will highlight their successes and challenges.

Not repeated
D17 Mathematical Opportunities
Workshop Years 4 to 8
Sharyn Livy - Mathematical Association of Victoria, VIC
Dr Tracey Muir - University of Tasmania, TAS

As teachers we are constantly looking for ways in which we can provide students with mathematical opportunities to engage in purposeful and authentic learning experiences. On a daily basis we need to select teaching content and approaches that will motivate and challenge our students. This requires a level of knowledge that extends beyond content, to pedagogy and learning styles. In this seminar we will provide some examples of mathematical opportunities and how teachers can capitalise on these opportunities in their own classrooms to engage and challenge students.

Repeated as C17

D18 Insights Into The Problem Solving Procedures
Workshop Years 5 to 6
Wong Oon Hua - Nanyang Technological University/National Institute of Education, Singapore
Chai Gek Mui - South View Primary School, Singapore

This study analyses the problem solving procedures of a sample of grade 6 students. The different procedures, both successful and less successful, will be analysed and discussed. Examples will be used to illustrate and clarify the different procedures used by the students. The procedures will be categorized using Polya’s problem solving framework and some observations will be shared. Implications for learning and teaching will be discussed. Some background literature in problem solving will be shared to better understand the procedures adopted by the students in problem solving.

Repeated as C18

D19 Linking the Australasian Problem Solving Mathematical Olympiads and the Australian Curriculum Proficiencies
Workshop Years 5 to 8
Dr Anne Prescott - APSMO Inc, NSW
Jon Phegan - APSMO Inc, NSW

Commercial Presentation

This workshop introduces the APSMO Maths Olympiads Program and its benefits in terms of the proficiency strands of the Australian Curriculum. The Olympiads consist of a series of five contests aimed at increasing mathematical problem solving and reasoning skills and as a result the enhancement of students’ enjoyment and enthusiasm for mathematics. (APSMO Inc is a not-for-profit organisation.)

Repeated as C20

D20 Techniques that Foster Persistence with Challenging Tasks
Workshop Years 5 to 8
Dr Jill Cheeseman - Monash University, VIC

This workshop will share some of the challenging tasks we have been trialling in the Exploring Persistence Maintaining Challenge Project. We will discuss some of the techniques teachers use to encourage students to persist when mathematics becomes difficult for them. We will also share the views of students who have been participating in the project.

Not repeated

D21 Obstacles to Successful Teaching
Lecture Years 5 to 10
Helen King - S/E Private Tutor, VIC

Since retiring from the classroom as Head of Department, I have individually taught 100+ students from 30 different primary, secondary, government and private schools in outer south-east. This has included students from Years 4-12. Most of my students have made dramatic progress. I want to share some of the key principles used in my instruction that have removed many barriers to a deep understanding of Mathematics including language, incorrect assumptions about prior learning, lack of strategies to unlock problems etc. Participants will have the opportunity to name topics and I will show the steps used to gain a deep comprehension of the topic. Diagnostic tests in Number will also be shared.

Not repeated

D22 Spreadsheets - The Ultimate Maths Tool
Computer Workshop Years 5 to 11
Glenn Sullivan - Wonthaggi Secondary College, VIC

This session will explore the option of using spreadsheets in the classroom. Sample spreadsheets that help student learning will be introduced. Several spreadsheets will be developed as a student will develop them in a classroom.
Participants will use functions, formatting, charts and lookup tables. Suitable for new and intermediate spreadsheet users - upper primary school to senior secondary.

**Note:** Bring a USB memory stick

Repeated as E22

**D23** How We Tripled Student Mathematics Growth Through Effective Use of Student Data  
**Lecture**

Lachlan Yeates - Warracknabeal Secondary College, VIC  
Sara Graf - Warracknabeal Secondary College, VIC

In 2012 Warracknabeal Secondary College starting combining standardised test data with the ‘diagnose and intervene’ method of teaching, and achieved some astounding results. This presentation will discuss how to get the most out of your test data, provide some formatted Excel workbooks to effectively manage and analyse your data, and will discuss the future directions for the program.

Repeated as C22

**D24** Scoring Mathematics Papers  
**Lecture**

Professor John Barnard - EPEC Pty Ltd, VIC

Scoring tests is a straightforward process - simply ask a number of questions, add the number of questions answered correctly and a number-correct (total) score is obtained. However, how are missing responses treated? Clearly a student will be advantaged if missing responses are treated as missing instead of wrong. It is also possible to guess a correct answer in a MCQ. Should the students score be corrected for possible guessing? Should all the questions contribute the same to the construct being measured or should they be weighted, and if so, how? These and other issues will be addressed in this presentation.

Not repeated

**D25** Being Positive About Negative Numbers  
**Workshop**

Dr Wendy Taylor - Scotch College, VIC

This workshop will present a differentiated unit on the topic of integers. Based on an inclusive model of differentiating that I learnt about at last year’s MAV Conference, the presentation will demonstrate how pre-testing, student grouping, tiered tasks, games, analogies and proof can be used to positively impact students’ understanding and knowledge of integers and their arithmetic.

Not repeated

**D26** Number Fluency Assessments from a Secondary Perspective  
**Workshop**

Robert Steer - McGuire College, VIC  
Axanthe Knott - McGuire College, VIC

This presentation would show teachers how we provide individualised tasks to support learners who are below Year 7 level for maths. This presentation would address the following points:

◊ Why we have chosen the Number Fluency Assessment (NFA) model;  
◊ How we conduct NFAs with individual students;  
◊ How we plan, train, test, teach and assess on an ongoing basis for a large group setting;  
◊ Provide electronic resources to support NFA implementation (including the assessment books, the fluency task library and recording instruments).

**Note:** Please bring your own laptop for collecting electronic resources.

Repeated as F27

**D27** Enrichment Activities for High Performing Students  
**Workshop**

Debra Brooks - Glen Waverley Secondary College, VIC  
Donna Callow - Glen Waverley Secondary College, VIC

Finding relevant and stimulating activities that cater for all abilities in the Mathematics classroom is a continual challenge for most time poor teachers. Of particular concern to us with our significant number of high ability and highly motivated students (within our mixed ability classrooms) are activities that enrich and enliven their experience of mathematics. We have developed a number of activities that can be used for most students within a typical classroom, but also extend further into areas of mathematics not usually encountered in secondary school. This session will be a workshop where participants can do the activities and see how they may be used within their own classrooms.

Repeated as B28
D28 Investigating How Journal Writing Improves Students’ Problem Solving Skills and Strategies
Lecture
Years 7 to 10
Oguzhan Yilmaz - University of Melbourne, VIC
Comprehension of worded problems is a major difficulty for students in a majority of Australian schools. Many students can reproduce algorithms taught in class, but cannot solve similar tasks given as worded problems. For this study, worded problems refer to mathematical problem solving questions expressed in narrative form, which are solved either arithmetically or algebraically. This presentation will discuss how journal writing helped students improve their problem solving skills and demonstrated their mathematical reasoning and understanding to their teachers. It will also discuss both teacher and students perspectives about using journal writing to help improve problem solving skills and strategies.
Not repeated

D29 assessON: Assign, Monitor and Track Student Progress With Ease
Computer Workshop
Years 7 to 10
Evan Curnow - Jacaranda, VIC
Shirley Sharpley - Jacaranda, VIC
Commercial Presentation
Would you like to have easy access to an overview of your class’ progress? Do you want to save time setting, checking and marking students' homework and tests? assessON is a powerful, effective online assessment tool for Mathematics. It assesses students’ readiness FOR learning, their progress AS they learn and their levels OF learning. Teachers armed with assessON are perfectly placed to undertake targeted intervention with their students. Learn how his tool can be seamlessly integrated into your classroom and how it dovetails into the Jacaranda Maths Quest 7-10A Australian Curriculum series.
Repeated as B33

D30 Mathspace - Personalised Textbook, Workbook and Markbook on Your iPad
Lecture
Years 7 to 11
Mohamad Jebara - Mathspace, NSW
Erin Gallagher - Mathspace, NSW
Commercial Presentation
Imagine if you didn’t have to worry about tediously marking homework - if marking could be done automatically, so you could focus on teaching. Imagine being able to snapshot each of your students’ strengths and weaknesses in a few seconds. Imagine an online maths tool that taught students how to set out their working. Mathspace is a structured and thorough math teaching and learning tool suite, not a simple multiple choice game. It allows students to input FULL working for algebra, geometric proofs and reasoning, and even allows students to easily draw probability trees and their own graphs, all on the one page. Bring your iPad along to experience the next generation in e-learning tools.
Note: Bring your iPad along to experience the next generation in e-learning tools.
Repeated as E34

D31 The Australian Curriculum and Mathematica
Lecture
Years 7 to 12
Carmen Popescu-Rose - Loreto Mandeville Hall Toorak, VIC
Karen Reid - Broadford Secondary College, VIC
This lecture is intended to demonstrate the use of the Mathematica software in teaching mathematical concepts, assessing, and mapping student progress in Mathematics from Years 7-10 levels within the Australian Curriculum. The lecture will show how Mathematica functionality may be used for exploring mathematical concepts for understanding, exploring proofs and theorems for reasoning, assessment for, as, and of learning and formal assessments for fluency and real life applications for problem solving across all secondary school levels from Year 7 to 12.
Note: Optional: Bring your own computer with Mathematica uploaded. A free trial can be downloaded from http://www.wolfram.com/mathematica/trial/
Repeated as F34

D32 The Pedagogical Advantages of the Wireless Networked Classroom
Lecture
Years 7 to 12
Dr Ray Williams - St Mark’s Anglican Community School, WA
This workshop provides participants with an opportunity to experience all aspects of the interactive capacity of the wireless connection of TI-Nspire devices (both calculator and netbook) to the teacher’s computer in the classroom. The ability to place a student in the role of ‘teacher’ provides a most useful degree of freedom for the teacher and results in immense pedagogical gains in the classroom.
Repeated as H33
D33 Photographic Evidence and Mathematical Science Education: A South African Perspective
Lecture  
Years 7 to 12
Asaph Nkomo - Tshwane University of Technology, South Africa  
Professor Willy Mwakapenda - Tshwane University of Technology, South Africa  
Williams Ndlovu - Tshwane University of Technology, South Africa
Research shows that photographs are rarely used in teaching and learning of school mathematics and science. This paper reports on how we have used photographs as a tool for documenting and understanding the context of mathematics and science education in South African schools. We demonstrate how photographic evidence not only helps us connect mathematical science concepts to the everyday world, but also how they help us gain a deeper understanding of communities involved in the implementation of reform-oriented mathematics and science education in schools.

Not repeated

D34 Using iPads in Mathematics Teaching
Lecture  
Years 7 to 12
Dennis Fitzgerald - Siena College, VIC  
Phillip Knight, VIC
How can we use iPads and similar technology in our classrooms? What Apps exist for us and which of the free ones are worthwhile. This will be a discussion of my use of iPads in a Year 9 and 11 class for the first time and some suggestions on how to use them and some of the pitfalls of their introduction. Please bring your iPad if you have one and any success stories! Note: This is a repeat of the 2012 presentation.

Note: Bring your iPad with you to share ideas.
Repeated as E37

D35 Resourcing Financial Literacy in Middle School
Computer Workshop  
Years 8 to 10
Anne Nunan - Financial Basics Foundation, QLD
The focus of this presentation is a practical workshop tour of our online game ESSI Money, and our teaching resource “Operation Financial Literacy”. ESSI Money is an engaging digital resource which provides an opportunity for middle school students to learn how to better manage personal finances. The game has direct application to the F-10 Mathematics Curriculum - “Money and Financial Literacy” (sub strand in Number and Algebra). Strategies for using financial literacy as a context for Mathematics, and the development of numeracy skills (in the context of General Capabilities) will also be addressed. Financial Basics Foundation is a registered charity established to educate secondary students about the credit system and responsible financial management practices. FBF teaching resources - “Operation Financial Literacy” and “ESSI Money” - are provided FREE OF CHARGE to all Australian secondary schools.

Repeated as F38

D36 Never Used a ClassPad II and Need to Know How?
Workshop  
Years 8 to 12
Anthony Harradine - Potts-Baker Institute, Prince Alfred College, WA
This workshop is for those who have never used a ClassPad II (FX-CP 400) and would like to learn the fundamentals in a short space of time. You will leave with support materials that will assist you in taking the next step. A tried and proven workshop that will have you using the machine with confidence by the end of the hour.

Note: ClassPads will be available for loan during the session.
Repeated as A46

D37 Mathematica - The Classroom Utilities Package
Lecture  
Years 8 to 12
John Fitzherbert - Loreto Mandeville Hall Toorak, VIC
There are many add-on packages available for Mathematica. One of the most useful of these in secondary school is called ClassroomUtilities` (yes, the prime is part of the name!). This session will examine the new commands enabled by the ClassroomUtilities` package, how to enable the package, how to use the new commands and suggestions for where these may find a useful place in the teaching and assessment of mathematics in Years 8 to 12 with a focus on the VCE years.

Note: Participants may wish to bring a laptop with Mathematica installed. This is not compulsory however.
Repeated as G40
D38 Biggest Loser - Gambling
Lecture
Years 9 to 10
Robert Money - Victoria University, VIC
We will outline a unit of work that covers the probability content of the Year 9 curriculum through activities that highlight the long term expectation of losses in forms of gambling, in particular in sports betting and on poker machines. Various cross curricular efforts have been made to address this social issue and it is time for mathematics teachers to share the responsibility and to provide their unique quantitative perspective. We aim to do this without promoting ‘winner’s excitement’ or the accessibility of on-line gambling.

Note: Bring a memory stick - for word and excel files.
Repeated as C39

D39 Pascal’s Triangle and The Binomial Theorem
Lecture
Years 9 to 12
Geoffrey Menon - Camberwell High School, VIC
The arithmetic triangle (named Pascal’s triangle by Fermat) has been an object of mathematical interest for over one thousand years. From Omar Khayyam and the binominal theorem, through combinations, distributions and fractals we explore some of the remarkable properties of this extraordinary mathematical object.

Note: There is some mathematical content in this talk.
Repeated as C41

D40 When Maths and Physics Collide Using the iPad
Workshop
Years 9 to 12
Brendon Herron - Guilford Young College, TAS
Chris Bracken - Guilford Young College, TAS
In this session we will be looking at collecting data using Video Physics (an application for the iPad) to model real life situations to enhance understanding in the maths and science classrooms. Data is collected using the video capabilities of the iPad and then analysed using Video Physics. Data can then be transferred to your Graphical Calculator or Excel for further analysis by your students. This activity will cover:
◊ How to collect video, calibrate and display correctly
◊ Transferring the data to computer
◊ Different activities that could be used in the Maths and Physics classrooms
Suitable for Windows and Mac.

Note: A number of iPads will be available for use by participants
Repeated as E40

D41 Worthwhile CAS Calculator Use in this Year’s 2nd Methods Exam?
Workshop
Years 10 to 12
Kevin McMenamin - The Peninsula School, VIC
Savvy use of the CAS calculator in past Methods 2 examinations has shown it to be advantageous and worth the time and effort in getting to know its workings. Generally half of the multiple choice questions and many parts of the extended answer questions benefit from good calculator skills. This hands-on session will get you using the calculator to see just how helpful (or not) it was with this year’s questions. The most efficient methods will be presented and questions where the calculator should be avoided will be pointed out. The session is suitable for TI-Nspire and ClassPad users and the Casio ClassPad will be the featured CAS.

Note: Bring along your own calculator. Some ClassPads will be available for loan.
Repeated as F44

D42 Team Teaching Senior Mathematics - Can it Work?
Workshop
Years 10 to 12
Ewan Campbell - John Monash Science School, VIC
Rebecca Cooper - Monash University, VIC
At John Monash Science School, most classes are taught by two teachers, including VCE Mathematics subjects. In this talk we will discuss the benefits of team teaching as well as some of the challenges created by this format. Included are some strategies for effective collaboration and planning used by our faculty and the technologies we use to support us. We will also give findings of research by Monash University into teacher and student perspectives of team teaching.

Repeated as H38
D43  Real Data for Unit 3-4 Further Mathematics and Other Year Levels

Computer Workshop  
Dana Frantz - Ballarat High School, VIC
Giovanni Liubicich - Ballarat High School, VIC

Starting with Gapminder, then the Bureau of Meteorology, participants will have the opportunity to explore several web sites from which data sets related to the mathematics of the planet earth can be extracted and used to create SACs and other work for their students. These web sites can be used to visually illustrate several Unit 3-4 Further Mathematics statistical techniques such as transforming data and moving averages. Other web sites with ‘real life’ data may also be explored. These sites can be used at a variety of year levels to provide real data sets for your students to work with.

Repeated as F43

D44  Bouncing Into Mathematics

Lecture  
Peter Fox - Texas Instruments, VIC

Bounce! These trampoline centres are opening up everywhere and they are incredibly popular with teenagers. How can they be used to study mathematics? See how much mathematics my students completed when they visited bounce. Topics included: measurement, mean, weighted mean, quadratic functions and using spreadsheets and other technologies. This activity is directed toward middle school mathematics students and is guaranteed to be the talking point in class for quite some time.

Not repeated

D45  Programming TI-Nspire for Fully Automated Solutions of Mathematical Methods CAS Exam 2 Questions

Lecture  
Mehmet Altundal - Sirius College, VIC

In this workshop we will create programs with TI-Nspire which can solve some Mathematical Methods CAS Exam 2 questions with one click. After covering essentials of programming with TI-Nspire, participants will start writing their first programs. We will then examine our programs with past exam questions. Participants will leave with programming skills and TI-Nspire programs that are ready to be used to boost their students in VCE exams.

Note: Please bring TI-Nspire CAS (CX/Clickpad/Touchpad) calculator to this session.

Not repeated

D46  Role of Parameters in Mathematics Teaching

Lecture  
Yuriy Verkhatsky - Carwatha College, VIC

In Math Methods and Specialist Math courses there are a noticeable amount of problems with parameters. This is probably the trickiest bit about use of pronumerals in math problems. A parameter is a quantity that influences the output or behaviour of a mathematical object but is viewed as being held constant. One place parameters appear is within functions. For each value of the parameters, we get a different function. The equation is said to produce a family of functions. In this presentation influence of parameters on different functions and approach to solving problems with parameters is investigated.

Not repeated

D47  Autograph for Year 11-12 (Laptops and Mobiles)

Lecture  
Douglas Butler - ICT Training Centre (Oundle), UK

Commercial Presentation

Autograph is now available on both laptops and iPads. The tablet version, still evolving, is being designed from scratch to maximize the benefit of the touch environment and its built-in camera. This session will show how Autograph’s friendly operation, coupled with fascinating resources on the web, can be used to add dynamic content directly in the classroom or in easily recorded ‘flipped’ lessons. Calculus topics include introducing differentiation and integration, 3D vectors, volumes of revolution and differential equations. Teaching statistics and probability also offers rich opportunities for visualisation.

Note: Bring your laptop or iPad (or both!). Software will be provided or easily downloadable

Repeated as F50
D48  Computer Generating Random Maths Worksheets with the Entire Correct Notation
Lecture  Years 12 to 12

Robert Rook, TAS

**Commercial Presentation**

Tired of wasting time generating senior maths worksheets, or trying to insert all the correct symbols in the questions and answers. Suitable for all 3 Year 12 maths classes. You will receive a FREE copy of software to generate your own revision sheets, and Homework booklets. The software comes with randomness built in so you generate an infinite number of worksheets and booklets.

*Repeated as C49*

**SESSION E: 9:00am-10:00am Friday 6th December**

**EK1  The Future of Maths is in Your Hands - Embrace IT!**

*Keynote  Years F to 10*

Narissa Leung - Campbells Creek Primary School, VIC  
Anthony Speranza - St Marks Primary School, VIC

An increasing number of our students are disengaging with Maths studies and it is time we turned this trend around. How effective are current practices in engaging our students with Maths instruction that is rich, real and relevant for today’s 21st century learners? By combining modern pedagogies with effective use of available technologies we can start to re-engage students and ignite their passion for Mathematics. In this presentation Narissa and Anthony will discuss the WHY and HOW of harnessing the power of educational technologies to move toward effective student-centred instruction in Maths. Using free online tools we look at how you can transform Maths instruction in your classroom and where you can go to see it already happening. Technophobes welcome and encouraged to attend!

*Note: Participants may want to bring laptops to look at some of the websites and tools mentioned in the presentation.*

Narissa is currently a Leading Teacher (Curriculum and ICT) at Campbells Creek Primary School in Castlemaine. Last year Narissa was awarded the prestigious Lindsay Thompson Fellowship in recognition of her work in leading teachers across her Region to improve their practices. She has visited schools across Australia, Singapore and the USA researching best practice in technology integration, pedagogy and leadership. Anthony is the Senior Teaching & Learning Leader at St. Mark’s Primary School in Dingley, Victoria. In his time at St. Mark’s, he has established several digital literacy initiatives, developed cybersafety and global citizenship programs, and introduced multimedia software and hardware into P-6 classrooms. Narissa and Anthony both hold a Masters of Education (ICT) and recently participated in a study tour around the USA visiting schools and industry leaders including Google, Microsoft and Intel. They finished their tour at the largest eLearning conference in the world- the ISTE (International Society for Technology in Education) conference, where they took out the honour of being crowned the Inaugural winners of the ISTE Iron (Technology Innovation) Chefs.

**EK2  Creative Approaches to Skills and Drills**

*Keynote  Years 7 to 10*

Jennifer Palisse - Mater Christi College, VIC

Students can often view the mathematics classroom as a place where they are asked to complete set after set of mundane, repetitive skills. This session will showcase some interesting activities you can use in your classroom that will spice up your skills and drills questions, while still providing the necessary opportunity for repetitive practice. The intent behind these activities is to shroud the repetitiveness within a highly engaging task while providing some motivation to do the practice. We will also look at how you can use an already good task and tweak it to include these skills and drills practice. This would be particularly relevant for those considering a textbook-less environment that want to avoid simply replacing a textbook with a pile of equivalent worksheets.

Jennifer Palisse is currently the Gifted and Talented Coordinator at Mater Christi College. Her focus in the classroom is to ignite an interest in mathematics in her students by providing them with interesting, yet challenging activities. Jennifer is part of the Mathematical Methods Mathematica trial and is interested in student learning in a CAS environment.
E3  More Reasons to Include Reasoning in Your Lessons  
Workshop  
Dr Leicha Bragg - Deakin University, VIC  
Associate Professor Colleen Vale - Deakin University, VIC  
Dr Sandra Herbert - Deakin University, VIC  
Dr Esther Loong - Deakin University, VIC  
Dr Wanty Widjaja - Deakin University, VIC  
Dr Gaye Williams - Deakin University, VIC  
Associate Professor Judy Mousley - Deakin University, VIC  

Ensuring mathematical reasoning is present in each lesson is easy to achieve. Building on our MAV presentation from last year, the Mathematical Reasoning Research Group (MaRRG) at Deakin University will offer a new range of tasks and prompts that promote reasoning in the classroom. We will share insights and ideas from our reasoning research project with primary children and teachers from both Australia and Canada. Join us in our exploration of effective and engaging approaches to reasoning.  

Repeated as F4

E4  Spatial Concepts and Reasoning are Vital in Fully Understanding Planet Earth  
Workshop  
Pamela Hammond - ROPA Consultancy, VIC  

Having students make sense of the space around them, features of 2D and 3D shapes, the ability to visualise images, then describe and represent them has been seen increasingly as vital for success in a wide range of careers. This area of mathematics has a strong emphasis in the Australian Curriculum, both in the content strand ‘Measurement and Geometry’ and the General Capabilities ‘Using Spatial Reasoning’. This hands-on workshop will explore the curriculum at Levels F-6 through engaging activities and resources linking these to appropriate descriptors in the Australian Curriculum.  

Repeated as F5

E5  Introducing the Birth to Year 10 Mathematics Continuum  
Workshop  
Helen Gist - DEECD, VIC  
Denise Jacobsson - DEECD, VIC  
The Birth to Year 10 Mathematics Continuum is based on a range of frameworks including the AusVELS. This session introduces the Continuum and give participants the opportunity to explore this resource and discuss how it can be used to improve teaching and learning in Mathematics. A key feature of the Continuum is the milestones of mathematical skill and concept development from birth.  

Not repeated

E6  AusVELS Numeracy Assessment Made Easy - Essential Numeracy Assessment  
Lecture  
Andrew Spitty - Essential Assessment, VIC  

Commercial Presentation  
Essential Assessment provides an easy and affordable way for Victorian Primary and Secondary schools to deliver a consistent and whole school approach to AusVELS numeracy assessment and reporting. The Essential Numeracy AusVELS Assessments have been carefully prepared adhering to the new AusVELS curriculum and reporting system. The result is a powerful set of assessment documents that can be used by classroom teachers to identify strengths, weaknesses and improvements in their students, the ability to more easily target their numeracy curriculum to their class while delivering a reportable AusVELS progression point for each of their students.  

www.essentialassessment.com.au  

Repeated as B8

E7  Keeping it Real: Kids as Virtual Coaches making sense of Real Life Maths (1:1 friendly)  
Workshop  
Phill Cristofaro - Flemington Primary School, VIC  

One of the three main aims of the Australian Curriculum: Mathematics is that students "recognise connections between the areas of mathematics and other disciplines and appreciate mathematics as an accessible and enjoyable discipline to study". As virtual coaches, students can use a range of tools to explore the deep connection that exists between statistics, mathematical processes and sport. In this session we will explore the digital tools available to put learners into the Coach’s Box – building their capacity to calculate, use and understand data. This interactive session will provide teachers with ideas to engage their students with real-life maths and empower them to direct their own learning. We will look at how mobile technologies such as iPads and tablets enhance opportunities for creative content creation, collaboration and sharing - strengthening links with other curriculum areas, particularly reading and writing.  

Note: Bring a laptop or tablet.  

Repeated as G8
E8 Connect with Maths, Your New Online Community
Lecture
Renee Hoareau - AAMT, SA
The Connect with Maths Project aims to build a dynamic education community to support Australian teachers of mathematics in intuitive, personalised and flexible ways. Teachers will access a range of networks and activities that support quality contemporary learning in the context of implementation of mathematics in the Australian Curriculum. The Connect with Maths project is funded by the Australian Government Department of Education, Employment and Workplace Relations through the Mathematics and Science Participation Program. Come and learn about the current communities and how you can be involved.

Repeated as A8

E9 Mathletics Assessment and Reporting
Computer Workshop
Andrew Nicholls - 3P Learning, NSW
Commercial Presentation
This session will focus on all the new additions to the assessment and reporting functions within Mathletics. We will look at how to obtain formative assessment data using Mathletics, and how to use that information to make key pedagogical decisions. Teachers are shown how to modify course curriculum content in order to design individual or group programs of study for students who need greater degrees of differentiation. Completion of this session ensures teachers are better prepared to use Mathletics as a teaching tool to respond to actual student performance, ensuring closer alignment to student learning goals.

Repeated as A10

E10 Enabling Rubrics to Reveal What Would Otherwise Remain Unknown
Lecture
Alexander (Alec) Young - Ingenious Technological Enterprises, TAS
Commercial Presentation
Alec has collaborated with schools in three states to develop a ‘world first’ means by which teachers obtain insights into student learning needs that would otherwise remain hidden. Teachers achieve this by using their school’s photocopier as a high speed scanner providing forensic feedback on each student’s learning, thus assisting in the development of individual learning plans for each student based on their learning needs. It can also show the teacher the nature of each student’s erroneous thinking when he/she gets things wrong. This has transformed teaching, enabling huge productivity gains.

Repeated as B9

E11 Place Value Assessment and Teaching in Year 2-6
Workshop
Angela Rogers - RMIT University, VIC
This session will report on the findings of my research project developing a comprehensive paper and pen and online whole number place value assessment tool for Year 2-6 students. The emergence of seven critical aspects of place value will be shared and practical ideas for teaching these will be explored. Examples of items from the PVAT (Place Value Assessment Tool) will be used to illustrate common student misconceptions that emerged throughout the project.

Repeated as A16

E12 Geometry Through the Art of Paper Folding
Workshop
Averil Lee - University Of Otago, New Zealand
This workshop will provide a hands-on display of how the properties of geometrical shapes can be explored through the art of paper folding. Ten different shapes will be made with conversations and discussions ranging from what the shape is called to how can this shape help to prove the sum of the angles in a polygon. Every attendee will receive a CD with materials from the workshop.

Repeated as F14

E13 Maths With Attitude: An Alternative to Text-Based Learning
Workshop
Douglas Williams - Black Douglas Professional Education Services, VIC
The Australian Curriculum: Mathematics expects “... increasingly sophisticated and refined mathematical understanding, fluency, logical reasoning, analytical thought and problem-solving skills”. Maths With Attitude offers an investigative, hands-on approach to fulfilling this objective through the context of working like a mathematician. Each kit includes twenty tasks and the suite of sixteen kits develops a sequenced core curriculum across all content and proficiency strands from Years 3-10. Skills are developed and practised in context. Access to Maths300 is not
necessary, but enriches if available. Explore this resource and assess how it can support the realisation of the national curriculum.

Not repeated

E14 Getting the Most Out of Cambridge HOTmaths
Lecture
VJ Gunawardana - Cambridge University Press, VIC
Victoria Cook - Cambridge University Press, VIC

Commercial Presentation
We’ve collected the best tips, tricks and ideas from other teachers to share with you in this in-depth presentation. Hear how teachers are getting the most out of Cambridge HOTmaths for homework, study, in-class teaching and personalised learning. Explore an exciting range of curriculum content, activities, games, investigations, assessment material and reporting for the Australian Curriculum. Find out about the powerful Test Generator, the Search/ Research tools, and the Class and Homework Task Management system, supporting students of all ability levels and learning styles. This workshop will be especially useful for teachers who are using Cambridge HOTmaths and would like to know more.

Repeated as F16

E15 Worksheet Wonder - Make Your Mathematics Worksheets Electronic and Interactive
Lecture
Bill Healy - Kilbaha Multimedia Publishing, VIC

Commercial Presentation
Do you use worksheets with your classes? Are you making the transition from print-based learning to device-based learning? If so, you need your mathematics content in electronic format and, where possible, in interactive format. See how Kilbaha Multimedia Publishing has done this with its well-known mathematics project books. “In the Running for the Olympics”, “In Training for the Olympics”, “In Search of the Holy Grail”. Learn how you can do this yourself if you have the time. Is there a need for a company like Kilbaha to provide this service to schools? Free copy of one interactive workbook to all attendees.

Note: Bring an internet connected device to get maximum value from this presentation.

Repeated as F18

E16 A Priming Intervention to Improve Grade 4 Students’ Mathematical Competency and Self Efficacy
Lecture
Diane Itter - La Trobe University, VIC
Melissa Sellick - La Trobe University, VIC
Lucy Lang - La Trobe University, VIC
Lauren Williams - La Trobe University, VIC

This option provides an overview of a study that evaluated a priming intervention implemented with eight Grade 4 students identified as low achievers in mathematics. The aims of the study were:

1. To evaluate the overall impact of a priming intervention on low achieving students’ mathematical competence, confidence, and self-efficacy;
2. To explore individual student responses and performance during intervention sessions and normal mathematics lessons; and
3. To identify the enablers and constraints associated with the development, implementation and evaluation of a priming intervention program for low achieving Grade 4 students.

Not repeated

E17 Problem Solving Strategies Through the Lens of the Australian Curriculum 4-7
Workshop
Richard Korbosky - ECU/MAWA, WA

It is important to develop student's understandings through the use mathematics manipulative materials. It is also important to link their understandings to symbols and problems solving strategies. In the real world students need to be able to think in a variety of ways to solve problems What are the strategies that should be in their problem solving toolbox? Developing flexible ways of thinking is the key. The foci in this session will be on problem solving strategies using Venn diagrams, draw a diagram, make a table and look for all possibilities. Clear links will be made to the Australian Mathematics Curriculum.

Not repeated
E18 Using Whole Numbers and Number Lines to Develop Fraction Understanding
Workshop

Dr Catherine Pearn - The University of Melbourne, VIC
Dr Max Stephens - The University of Melbourne, VIC

This presentation focuses on students’ use and understanding of number lines in two main ways. First, it examines how students represent fractions on a number line, particularly the strategies they employ when placing simple fractions on a number line, without necessarily measuring, but relying on making sensible subdivisions ‘by eye’. A second focus is on how number lines, initially involving whole numbers and their fractional parts, can be used to develop fractional language and to articulate fractional concepts that can subsequently be applied to fractions themselves.

Repeated as A23

E19 Adding to Conceptual Understanding of Some Number Topics Using Technology
Workshop

Carol Moule, SA

Technology can be used to teach new and old ideas with real benefits for students, particularly those who find mathematics difficult to understand. The TI15 Explorer™ calculator has many features that can assist conceptual development and understanding. Participants will be given a trial version of computer software which emulates this calculator, together with classroom ready activities which will deal with fractions, index laws and place value understanding using technology.

Note: Bring a laptop if you have one available.

Repeated as B18

E20 Analysing Students’ Result Through Conditional Formatting Using Excel for Early to Middle Years Mathematics
Computer Workshop

Iqbal Hossain - The Grange P-12 College, VIC
Rudy Birsa - Williamstown High, VIC

The effective incorporation of electronic based resources and tools allow teachers to save time for both assessment and reporting. The use of Excel is one of the best and simplest applications for this purpose. This session is designed for the beginner ICT user and specifically focuses on rubric based assessments. Any year level teacher can use these tools for ongoing assessment. We will use MS-Excel as a tool for maintaining assessment results and more importantly we will demonstrate how the use of conditional formatting can be used for the customisation of assessment records. An example of a typical analysis of students’ results will also be included.

Note: Participants should bring a USB stick (a laptop is optional).

Repeated as C21

E21 Removing the Classroom Lock Step: Maths Pathway
Lecture

Justin Matthys - Maths Pathway, VIC
Richard Wilson - Maths Pathway, VIC

Commercial Presentation

“Maths Pathway” is a new piece of blended learning instructional design - an online tool made by teachers for teachers. It reduces teacher workload by removing lock-step teaching and streamlining planning, assessment and reporting. Academic content is explicitly crafted around local curriculum. In addition to elements of ‘gamification’ and motivation theory, student choice is balanced against accountability. Teacher direction combines with student-set goals to form a calendar of learning tasks, to which students are held accountable. Maths Pathway not only captures and displays data, but also performs analysis to guide the teacher as a coach of students’ personal learning.

Repeated as F24

E22 Spreadsheets - The Ultimate Maths Tool
Computer Workshop

Glenn Sullivan - Wonthaggi Secondary College, VIC

This session will explore the option of using spreadsheets in the classroom. Sample spreadsheets that help student learning will be introduced. Several spreadsheets will be developed as a student will develop them in a classroom. Participants will use functions, formatting, charts and lookup tables. Suitable for new and intermediate spreadsheet users - upper primary school to senior secondary.

Note: Bring a USB memory stick.

Repeated as D22
E23 Simple Changes Leading to Big Class Outcomes: A Better Form of Feedback
Lecture
Anthony Fowler - Warracknabeal Secondary College, VIC
Kate Mongan - Warracknabeal Secondary College, VIC
Starting in early term of 2013, maths teacher at Warracknabeal Secondary College began to give students their effect size, rather than a raw mark as feedback. This led to a massive improvement in their learning, confidence and engagement, leading to significantly improved student outcomes. Find out the easy steps required to bring your classroom focus back to improvement. This presentation will explain the calculation of effect sizes, the classroom protocols used to implement the program and evidence of significantly improved student engagement and outcomes.
Repeated as G22

E24 Fun With Plane Shapes and Paper Folding
Workshop
Darren Brett - Tara Anglican School for Girls, NSW
Paper folding can be used to investigate the properties of plane shapes. In this presentation we will be focusing on the rectangle, square, trapezium and parallelogram. The session will finish by creating an interesting design which will be enjoyed by your students. This activity is also a great ‘Friday afternoon filler’, where the students will be kept busy... and learn at the same time!
Repeated as C24

E25 Algebra - Try Something Different
Workshop
Paul Dann - Belmont High School, VIC
Jane Kahle - Belmont High School, VIC
Hands-on activities focusing on Levels 7-9 of the Number and Algebra strand of AusVELS. Paul will demonstrate original, simple and fun ideas that engage students in Mathematics and at the same time teach those students the basics of Algebra. He will model lessons that use recycled, low-cost and easy to obtain equipment. He is an experienced full-time teacher (Years 7-12) at Belmont High School in Geelong and he has presented workshops for Teacher Training Australia (TTA). Paul will also discuss patterns, the need for formal algebraic structures and the origins of Algebra. He will surely inspire you to take up a new approach to your teaching of Algebra and other topics.
Repeated as A31

E26 Introducing ‘Algebracy’ (Algebraic Literacy) – Making Meaning of Symbolic Representations
Workshop
Alastair Lupton - Le Fevre High School, SA
One of the big leaps that students need to take, on their path to success in secondary mathematics, is the leap to the meaningful use of symbolic representations in the problems and ideas that confront them. It is a leap that eludes too many, and without it our algebra curriculum must resemble alphabet soup. This workshop looks at a problem-based introduction to algebra that is suitable for students in Years 7 or 8. The problems call for the generalisation of well-understood integer cases that the students have ‘played with’ and in which the underlying processes are clear.
Not repeated

E27 Thinking, Creating and Understanding
Workshop
Professor Derek Holton – The University of Melbourne, VIC
I will present a single ‘nice’ problem (a different one in each of my two sessions), that we will develop to show, I hope...
1. How mathematicians work;
2. How this is relevant to the curriculum; and
3. How this is relevant to students in and out of the classroom.
Repeated as B29

E28 Solving Non-Routine Mathematical Problems With Two Unknowns
Lecture
Karim Noura - Bayside P-12 College, VIC
Participants will share visions and experiences of using non-routine problems in teaching and learning mathematics, especially in the area of mental computation as well as in algebra.
Repeated as B30
E29 ABS Products Supporting Deeper Statistical Understanding: Entry Points to the Australian Curriculum

Lecture

Vivienne McQuade - Australian Bureau of Statistics, VIC

In today’s information-rich society, being statistically literate has never been more important for students. Broadening their statistical knowledge will enable them to engage in discussions and decision-making processes with authority, accuracy and integrity. Statistics and Probability is a strand in the Australian Curriculum (AC) Mathematics and a sub-element of the general capabilities (numeracy). While the cross curriculum priorities are often issues that grab peoples’ attention, let’s recognise that often it is the statistics that inform these issues. We want students to accurately understand, interpret and evaluate the data that inform these issues. In this session, ABS resources will be profiled as authentic entry points to the teaching of statistics within the AC.

Note: Participants are encouraged to bring a laptop or tablet to follow exploration of the ABS and Education Services websites.

Repeated as C26

E30 How We Differentiate Our Classroom With the Use of Data And Technology

Lecture

Zoe Christie - Surf Coast Secondary College, VIC
Brad Foss - Surf Coast Secondary College, VIC

At Surf Coast Secondary College how we deliver and plan our differentiated maths curriculum in the Year 7-9 program has changed us as maths teachers for ever. Using pre-test data, Guttman charts and effect sizes to individualise learning programs has allowed us (with the use of technology) to target our teaching to flexible groups of students and confidently manage working at multiple points of need. All our students have access to a digital device (iPad) and we use a number of different apps to enable students to track their own progress, and highlight their next level of work.

Repeated as F29

E31 World Data + Mathematica = Australian Curriculum

Lecture

Brian Hodgson - Independent consultant, VIC
Elizabeth Burns - Australian Mathematical Sciences Institute (AMSI), VIC

The rationale for the Australian Curriculum: Mathematics states that “in geography, interpretation of data underpins the study of human populations and their physical environments” and that the curriculum “encourages teachers to help students become self-motivated, confident learners through inquiry and active participation”. In this session we will show you how to design efficient and motivating units focused on geographical and other geometrical aspects of 7 to 10 Mathematics which are consistent with this rationale. Mathematica and Wolfram Alpha will be the IT tools we use to facilitate this. No prior experience with Mathematica is required.

Repeated as F30

E32 Deepening Students Understanding of Data Using Tinkerplots Dynamic Data Exploration Software

Workshop

John Lawton - Objective Learning Materials, VIC
Dr Ian Lowe - The Mathematical Association of Victoria, VIC

Commercial Presentation

The Digging into Australian Data with Tinkerplots lesson plans were developed by a team of educators at the University of Tasmania and are aligned with the goals of the Australian Curriculum – Mathematics. In this session participants will work with these inquiry-based lessons, and with the Tinkerplots Dynamic Data Exploration software. The lessons encourage students to learn essential data analysis concepts and skills. Real-world Australian data sets will be used, these can engage students of subjects such as history and science to make conjectures, create and interpret graphical representations and to write evidence based conclusions. This is a commercial presentation by the publisher, OLM.

Not repeated

E33 Teaching Logic in Math Teaching

Workshop

Yuriy Verkhatsky - Carwatha College, VIC

Logic is usually left out from education in mathematics. This fact has effects on understanding of mathematics as well as science and even learning languages. It also has impact on decision making skills throughout the life. According to Oxford English Dictionary logic is the science of reasoning, proof, thinking or interference. Mathematical logic is use of problem-solving skills to determine a solution. Teaching logic basics equips students with skills how to break down information in the math problem and also equips them with reasoning skills. Solving logic problems helps
make learning of math fun and is an excellent warm up.

Not repeated

E34 Mathspace - Personalised Textbook, Workbook and Markbook on Your iPad
Lecture
Mohamad Jebara - Mathspace, NSW
Erin Gallagher - Mathspace, NSW

Commercial Presentation
Imagine if you didn’t have to worry about tediously marking homework - if marking could be done automatically, so you could focus on teaching. Imagine being able to snapshot each of your students’ strengths and weaknesses in a few seconds. Imagine an online maths tool that taught students how to set out their working. Mathspace is a structured and thorough math teaching and learning tool suite, not a simple multiple choice game. It allows students to input FULL working for algebra, geometric proofs and reasoning, and even allows students to easily draw probability trees and their own graphs, all on the one page. Bring your iPad along to experience the next generation in e-learning tools.

Note: Bring your iPad along to experience the next generation in e-learning tools.

Repeated as D30

E35 Hints for Young Players
Lecture
Peter Collins - Mordialloc College, VIC

A lecture/demonstration aimed at inexperienced teachers of high school mathematics. The presenter, having thrown away careers in taxi driving and fruit picking (among others), has spent the past 24 years becoming an experienced half competent? Teacher of Maths. He is currently Maths coordinator at a suburban secondary college. This session is aimed at providing the audience with the benefit of his experience, ie. a journey through his career illustrating what works, what doesn’t and how to survive and thrive with both.

Repeated as F36

E36 Effective Mathematics Teaching and Learning in the 1:1 Classroom
Lecture
Marcel Van Otterdyk - Strathmore Secondary College, VIC

This session will provide an introduction to how a range of free web based resources can be used to improve understanding and aid in the development of critical thinking skills in Mathematics. The resources to be covered include Wikispaces, Google Drive and Mathematica.

Note: If possible, please bring your own iPad or laptop and your own wireless internet access.

Not repeated

E37 Using iPads in Mathematics Teaching
Lecture
Dennis Fitzgerald - Siena College, VIC
Phillip Knight, VIC

How can we use iPads and similar technology in our classrooms? What Apps exist for us and which of the free ones are worthwhile. This will be a discussion of my use of iPads in a Year 9 and 11 class for the first time and some suggestions on how to use them and some of the pitfalls of their introduction. Please bring your iPad if you have one and any success stories! Note: This is a repeat of the 2012 presentation.

Note: Bring your iPad with you to share ideas.

Repeated as D34

E38 Calculation - When To, When Not To And How!
Workshop
Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA

Calculation is a large part of doing mathematics at school. As a teacher, do you think about it much? Do you find yourself complaining that students are not good at it? The conversations we have will provide you with one way to think about calculation – a simple multi-faceted model. They will also convince you (I hope) to be explicit with your students when it comes to what you need them to be able to do fluently.

Note: ClassPads will be available for loan during the session.

Not repeated
E39  TI-Nspire for Mathematical Methods  
Lecture Years 9 to 12  
Sanjeev Meston - Hillcrest Christian College, VIC  
Maximising the use of TI-Nspire CAS technology for VCE Mathematical Methods course. This session is designed for regular and advanced users of the TI-Nspire CAS technology. Focus will be on important aspects and salient features of all CAS applications and tools that often are overlooked and not used in the classroom for the CAS enabled component of the VCE Mathematical Methods course.  
Note: TI-Nspire handheld or iPad application of the TI-Nspire or the Teacher Edition on Laptop  
Repeated as B42

E40  When Maths and Physics Collide Using the iPad  
Workshop Years 9 to 12  
Brendon Herron - Guilford Young College, TAS  
Chris Bracken - Guilford Young College, TAS  
In this session we will be looking at collecting data using Video Physics (an application for the iPad) to model real life situations to enhance understanding in the maths and science classrooms. Data is collected using the video capabilities of the iPad and then analysed using Video Physics. Data can then be transferred to your Graphical Calculator or Excel for further analysis by your students. This activity will cover:  
◊ How to collect video, calibrate and display correctly  
◊ Transferring the data to computer  
◊ Different activities that could be used in the Maths and Physics classrooms  
Suitable for Windows and Mac.  
Note: A number of iPads will be available for use by participants.  
Repeated as D40

E41  A Graph Colouring Book  
Lecture Years 9 to 12  
Dr Peter Van der Kamp - La Trobe University, VIC  
Dr Tomasz Kowalski - La Trobe University, VIC  
We will report on an activity we have set up for Year 9/10 students, which was part of a SEMS (School of Engineering and Mathematical Sciences) showcase event that ran in collaboration with Quantum Victoria. We present a colouring book where students are led to colour graphs whilst being exposed to mathematical questions and applications.  
Repeated as F39

E42  Creating and Using eActivities in the Upper School  
Workshop Years 10 to 12  
Charlie Watson - The Tuition Centre, WA  
The incredible flexibility and diverse applications of eActivities created and stored on a ClassPad is often overlooked by many teachers. The aim of this workshop is to share and demonstrate some existing types of eActivities and then for participants to develop their skills in creating and using eActivities to pass on to their students. A reasonable working knowledge of either the old or new ClassPad will be assumed to keep up with the hands-on activities, but if you’re new to the technology, just come along, sit back and see what’s possible. Demonstrations will use the new ClassPad fx-CP400 CAS calculator.  
Note: Bring your own new model ClassPad handheld or emulator if possible, but there will also be loan models to borrow.  
Repeated as C43

E43  Further Maths Examinations This Year: How Was the CAS Calculator Useful?  
Workshop Years 10 to 12  
Kevin McMenamin - The Peninsula School, VIC  
This session will look at questions from this year’s papers and discuss how useful the CAS calculator was in determining their answers. The ideas of pre-programmed material and hints that should be recorded in the bound reference to assist calculator functionality will be addressed. The session offers a hands-on experience that will give you the opportunity to use the calculator just like the students. Time will also be given to identifying the questions that are time consuming in calculator use and would be better done by other means. The session is open to TI-Nspire and ClassPad users and the featured calculator will be the Casio ClassPad.  
Note: Bring along your own calculator. Some ClassPads will be available for loan.  
Repeated as C42
E44 School-Assessed Coursework - Insights and Examples from Queensland Senior Mathematics
Lecture
Maggi Gunn - Brisbane Girls Grammar School, QLD
Jacqui Klowss - Marist College Ashgrove, QLD

The challenges of school-based assessment are many. Come along to share some insights and examples from Queensland Senior Mathematics - presented by Heads of Faculty from two independent Brisbane schools.

Repeate as A51

E45 Transformations in the Plane
Lecture
Stephen Swift, QLD

The use of matrices for general linear transformations is an important area of the Australian National Curriculum for Year 11 Specialist Maths. Participants in this workshop will work through the theory of transformations in the plane covered by the national Specialist Mathematics syllabus, including the appropriate use of CAS matrices. Participants will also learn how to use the Geometry feature of these calculators to show transformations. This is one of the areas in which the TI and Casio differ a little in capabilities.

Note: Participants should bring a CAS calculator to obtain maximum benefit.

Not repeated

E46 Maximization Using Maple: Polya Approach with Multiple Representation – With or Without Calculus
Lecture
Professor Bill Blyth - Australian Science & Engineering Solutions (ASES) and RMIT University, VIC
Dr Asim Ghous - Australian Science & Engineering Solutions (ASES), NSW

Commercial Presentation

Maple, a leading Computer Algebra System (CAS), has supported student learning for 20 years at RMIT University. We revisit some “Find the maximum” problems typical of VCE calculus but use Maple to implement a detailed and structured Polya “How to Solve It” approach (used by first year mathematics students at RMIT University). As well as the calculus solution, we obtain the solution without calculus by exploration using visualization, animations and multiple representations - and prove that our proposed solution is correct (without calculus). Finally, we briefly discuss our assessment experience with e-Marking and Computer Aided Assessment with Maple or MapleTA.

Repeated as H42

SESSION F: 10:45am-11:45am Friday 6th December

FK1 The Most Recent AHA! In My Mathematical Journey
Keynote
Dr Calvin Irons - Queensland University of Technology, QLD

I have been studying mathematics/mathematics education or teaching mathematics/ mathematics education in primary schools or university classes for nearly 50 years. I thought I had it all worked out. But I have learned a lot in the past 2 years due to my involvement in the implementation of the Common Core State Standards (CCSS). This document and the rich supporting material has been developed by a panel of respected mathematicians and mathematics educators and adopted by nearly all of the 50 states in the USA. This is the first ‘national’ mathematics document in the USA. There are significant changes in both the scope and sequence of the content. The clarity of the Progressions material that accompanies the CCSS is outstanding. The speaker will describe his experiences with the CCSS to help school districts in the USA implement it. The session will share observations regarding CCSS and what we can learn to improve our ACARA mathematics curriculum when it is updated. The presentation will focus on two themes: the general issue of depth versus extent of content (a criticism of many mathematics curricula) and some of the specific content teaching approaches related to computation and fractions. Both of these differ significantly from the view taken in ACARA and our current state curricula. The session will also describe the mathematical practices that underpin the CCSS. The mathematical practices provide a sharper focus for the approaches that are described in our proficiency strands.

Dr Calvin Irons has been involved in mathematics education for nearly 50 years as a primary teacher, university lecturer, researcher (topics have included the teaching of division, number facts and mental computation in the primary years), writer/author (published by ORIGO Education), public speaker and workshop presenter. In his role at Queensland University of Technology, he works with pre-service students and conducts numerous professional development activities nationally and internationally. He is a prolific writer, having written nearly 700 books and articles. His books have won numerous publishing awards from organisations such as the Australian Publishing Association, the National Education Association in the USA, and the National Science Foundation (USA). He enjoys discussing mathematics and the art of teaching mathematics as well as a good glass of wine!

Dr Calvin Irons - Queensland University of Technology, QLD
FK2 E=mc² : Breaking Apart the World’s Most Famous Equation  
Keynote  Years 5 to 12

Dr Tanya Hill - Melbourne Museum, VIC

It would be hard to find anyone who hasn’t heard of Einstein’s equation: E=MC². Beautiful and simplistic, this equation explains how a universe of pure energy became filled with stars, planets and even us. The story of how Einstein came upon this equation shows the playful side of mathematics. It reminds us that maths is a code to describe things we can’t experience and at its best, shows us that the universe is more interesting and peculiar than we might ever have imagined.

Dr Tanya Hill is Senior Curator of Astronomy at Museum Victoria’s Melbourne Planetarium, Scincetours. Over the last decade she has become a leading science communicator, with expertise for relating astronomy to audiences of all ages and backgrounds. She has developed fourteen planetarium shows for Museum Victoria, including Black Holes: Journey into the Unknown, which drew on her own PhD research. Tanya became interested in astronomy at high school, when a dusty telescope was pulled out of the cupboard to see the return of Halley’s Comet and she’s been amazed by the Universe ever since.

F3 Effective Teaching and Learning Using iPads  
Workshop  Years F to 6

Jennifer Bowden - The Mathematical Association of Victoria, VIC
Ellen Corovic - The Mathematical Association of Victoria, VIC

The use of iPads have become prevalent in primary classrooms. However teachers can find it challenging to find quality apps that enhance an effective mathematics program. Jen and Ellen will share a variety of iPad applications for students use as well as those to assist effective planning and assessment. All activities will be linked to the Australian Curriculum. Teachers will walk away with a variety of apps that can be integrated in a mathematics teaching and learning program as well as skills to chose further applications.

Repeated as B4

F4 More Reasons to Include Reasoning in Your Lessons  
Workshop  Years F to 6

Dr Leicha Bragg - Deakin University, VIC
Associate Professor Colleen Vale - Deakin University, VIC
Dr Sandra Herbert - Deakin University, VIC
Dr Esther Loong - Deakin University, VIC
Dr Wanty Widjaja - Deakin University, VIC
Dr Gaye Williams - Deakin University, VIC
Associate Professor Judy Mousley - Deakin University, VIC

Ensuring mathematical reasoning is present in each lesson is easy to achieve. Building on our MAV presentation from last year, the Mathematical Reasoning Research Group (MaRRG) at Deakin University will offer a new range of tasks and prompts that promote reasoning in the classroom. We will share insights and ideas from our reasoning research project with primary children and teachers from both Australia and Canada. Join us in our exploration of effective and engaging approaches to reasoning.

Repeated as E3

F5 Spatial Concepts and Reasoning are Vital in Fully Understanding Planet Earth  
Workshop  Years F to 6

Pamela Hammond - ROPA Consultancy, VIC

Having students make sense of the space around them, features of 2D and 3D shapes, the ability to visualise images, then describe and represent them has been seen increasingly as vital for success in a wide range of careers. This area of mathematics has a strong emphasis in the Australian Curriculum, both in the content strand ‘Measurement and Geometry’ and the General Capabilities ‘Using Spatial Reasoning’. This hands-on workshop will explore the curriculum at Levels F-6 through engaging activities and resources linking these to appropriate descriptors in the Australian Curriculum.

Repeated as E4

F6 If Pattern Blocks Were Metric…  
Workshop  Years F to 8

Rod Cameron - Hundred per Cent International, VIC

Commercial Presentation

Standard pattern blocks are ubiquitous in schools, especially as resources for the lower primary levels. While they are proven performers as manipulatives for enriching the learning of shape, pattern, translation and tessellations, they fall short in their capacity to link to metric measurement - length, perimeter, area, algebraic thinking (rules).
This session will introduce the ‘Hundred Per Cent Metric’ pattern blocks, and provide rich pedagogical support for Maths leaders to take back to their schools.

**Repeated as D4**

**F7  Accountable Learning**

*Lecture*

*Michael Portaro - Melton Primary School, VIC*

*Christopher Kellett - Melton Primary School, VIC*

Formative assessment is at the forefront of our everyday teaching practice at Melton Primary School. With the introduction of student conferences and negotiated goal setting, students are more informed of their strengths and weaknesses. Professional Learning Communities at MPS work with this formative data to provide workshops that students can sign up to. Students take ownership of their learning and aim to achieve their goals through participation in these workshops. Michael and Chris will offer a number of tools and strategies for the implementation of this workshop model at your school.

**Not repeated**

**F8  Lock Down Numeracy**

*Lecture*

*Benji Gersh - Parkville College, VIC*

I teach Numeracy to the students at the Parkville Youth Justice Precinct. It is a school within a prison. The students are the most disengaged, disenfranchised students in our state. Every day I engage them in meaningful and individualised numeracy learning experiences. I can show teachers a method of teaching numeracy that will enrich their experiences with their most difficult students, whilst enhancing their relationship with every other student. I have the secret to teaching numeracy to the ‘unteachable’ students, and enjoying it.

**Repeated as D8**

**F9  Revealing Quality Teaching**

*Lecture*

*Alexander (Alec) Young - Ingenious Technological Enterprises, TAS*

Commercial Presentation

Alec has collaborated with schools in three states to develop a ‘world first’ means by which teachers monitor the quality of their teaching through assessment for learning. A speaker at the ACEL 2012 conference told her audience “The students in my school, on average, learn at twice the pace of the nation and at twice the usual depth”. Teachers achieve this by using their school’s photocopier as a high speed scanner providing forensic feedback on each student’s learning needs, thus assisting in the development of individual learning plans for each student based on their learning needs. This has transformed teaching, enabling huge productivity gains.

**Repeated as A9**

**F10  Mathletics: Integrating the Resources**

*Computer Workshop*

*Lauren Anderson - 3P Learning, NSW*

Commercial Presentation

This course is designed to illustrate different methods for incorporating Mathletics into your learning unit and daily lesson plans. Utilising the different resources available within the program such as Teacher Toolkit and Concept Search, teachers are shown how to introduce new concepts in a collaborative forum for discussion and review. There will also be a short introduction to our NEW interactive online Science Resource (Into Science) which is a commercial presentation for those interested.

**Repeated as B10**

**F11  Incorporating Drama in Maths Lessons**

*Lecture*

*Siu Marn Lee - Fairfield Methodist School (Primary), Singapore*

*Lee Choon Nga - Fairfield Methodist School (Primary), Singapore*

During this session we will share how we incorporated drama in a Primary Two lesson on fractions. We will also show a video clip of the lesson as well as share how effective the approach was.

**Repeated as C8**
F12 iPads as a Learning Tool
Workshop
Fiorella Soci - Caulfield Grammar School, VIC
Natalie Erwin - Caulfield Grammar School, VIC
All students in our Year 4 classrooms have their own iPads this year - what do we do with them? This presentation is our journey through the first year of incorporating iPads into the Mathematics curriculum. We will share what we have done and what we have learnt - the good and the not so good.
Note: Bring your iPad along, but not required.
Repeated as G11

F13 What is in Your Top Drawer?
Computer Workshop
Kate Manuel - Australian Association of Mathematics Teachers, SA
The Australian Association of Mathematics Teachers has produced five electronic professional learning ‘drawers’.
Each drawer holds expert advice based on sound research, practical teaching suggestions and high quality classroom activities. In this workshop the drawers will be opened to show you some of the exciting resources that can be found in them. Explore Fractions (2-6), Mental Computation (2-6), Patterns (F-3), Statistics (4-10) and the Reasoning proficiency (F-10). You will find numerous activities, worksheets, slide presentations, videos, digital learning objects, extension ideas and more. The Top Drawer Teachers project has been created by AAMT with ESA for DEEWR.
Not repeated

F14 Geometry Through the Art of Paper Folding
Workshop
Averil Lee - University Of Otago, New Zealand
This workshop will provide a hands-on display of how the properties of geometrical shapes can be explored through the art of paper folding. Ten different shapes will be made with conversations and discussions ranging from what the shape is called to how can this shape help to prove the sum of the angles in a polygon. Every attendee will receive a CD with materials from the workshop.
Repeated as E12

F15 An Approach to Multi-Step Word Problems
Workshop
Associate Professor Marj Horne - Australian Catholic University, VIC
Two and multi-step word problems are one of the areas where students have difficulties as is shown on NAPLAN assessments. Just as the empty number line has provided many opportunities for students to advance their thinking in mental arithmetic and number calculations generally as well as being a tool that is always available so the ribbon diagrams used by our Singaporean colleagues provide a useful tool and a way of seeing worded problems. This session will be a practical one with participants exploring the use of these diagrams in tackling word problems.
Repeated as D15

F16 Getting the Most Out of Cambridge HOTmaths
Lecture
VJ Gunawardana - Cambridge University Press, VIC
Victoria Cook - Cambridge University Press, VIC
Commercial Presentation
We’ve collected the best tips, tricks and ideas from other teachers to share with you in this in-depth presentation. Hear how teachers are getting the most out of Cambridge HOTmaths for homework, study, in-class teaching and personalised learning. Explore an exciting range of curriculum content, activities, games, investigations, assessment material and reporting for the Australian Curriculum. Find out about the powerful Test Generator, the Search/ Research tools, and the Class and Homework Task Management system, supporting students of all ability levels and learning styles. This workshop will be especially useful for teachers who are using Cambridge HOTmaths and would like to know more.
Repeated as E14

F17 Spy Class: Engage Mathematics Students Through Narrative and Gaming
Lecture
Ron Barassi - Fractal Multimedia, VIC
Luke Jackson - Fractal Multimedia, VIC
Commercial Presentation
Maths teacher and digital content creator, Ron Barassi, sought to engage students, and give them an understanding of the real-world application of mathematics, through the use of narrative and games. He approached author Luke C
Jackson to develop a compelling story. The result is ‘Spy Class’. Aimed at Years 7 and 8 students, ‘Operation OTMA’ and ‘The Icarus Principle’ have been designed alongside the Australian Curriculum: Mathematics, and Jacaranda’s popular Maths Quest eBook and print series. Spy Class will be published by Jacaranda for the Australian market in 2013 for use in schools in 2014.

**Note:** Participants will be provided with a free trial of ‘Spy Class’ after the session.

**Not repeated**

**F18 Worksheet Wonder - Make Your Mathematics Worksheets Electronic and Interactive**

*Lecture* Years 3 to 12

*Bill Healy - Kilbaha Multimedia Publishing, VIC*

**Commercial Presentation**

Do you use worksheets with your classes? Are you making the transition from print-based learning to device-based learning? If so, you need your mathematics content in electronic format and, where possible, in interactive format. See how Kilbaha Multimedia Publishing has done this with its well-known mathematics project books. “In the Running for the Olympics”, “In Training for the Olympics”, “In Search of the Holy Grail”. Learn how you can do this yourself if you have the time. Is there a need for a company like Kilbaha to provide this service to schools? Free copy of one interactive workbook to all attendees.

**Note:** Bring an internet connected device to get maximum value from this presentation.

**Repeated as E15**

**F19 Measurement and Technology - Using Data Loggers**

*Workshop* Years 5 to 8

*Daniel Avano - Museum Victoria/Scienceworks, VIC  
Simon Kelly - Museum Victoria/Scienceworks, VIC*

Data loggers are a great tool to introduce students to maths topics such as graphing and measurement. Using data loggers in the classroom, real-life data can easily be collected by students leading to some meaningful and relevant investigations of the real world. This session will show you how these ICT tools can be used by students to draw connections between real world variables that they are investigating and the properties of graphs. If you have not used data loggers in the maths classroom before, this session will introduce you to some new ideas. Participants will also be given a quick overview of new maths resources available from Museum Victoria.

**Repeated as G16**

**F20 Speedy Maths - A Lesson in Fluency**

*Workshop* Years 5 to 9

*Thao Huynh - Sunshine College, VIC  
Victor Vu - Sunshine College, VIC  
Tim Purcell - Sunshine College, VIC*

Here is an opportunity to explore a range of activities that have been created and used during the middle years in secondary school classes, in order to build fluency and create sound mental models for maths. Differentiated and successfully engaging, these fun and exciting activities have been valuable in improving students’ efficiency, speed and accuracy when dealing with numbers.

**Repeated as H17**

**F21 Tips and Tricks for Having Your Students Feeling They Are Maths Geniuses**

*Lecture* Years 5 to 9

*Robert Rook, TAS*

**Commercial Presentation**

In this session I will present some of the techniques that can be applied to solve what would appear to be difficult maths problems to your students (and to a lot of adults) so that you (yes really mean you) can solve them simply and have you feel comfortable to show your students. These tricks work and will definitely see your students’ confidence soar immediately. You can present them with problems they can solve in their heads, something that they would never have thought possible.

**Repeated as G18**

**F22 Implementing a Differentiated Curriculum in Your Classroom - A Practical Solution**

*Lecture* Years 5 to 10

*Jodie Parsons - Staughton College, VIC  
Yvonne Reilly - Sunshine College, VIC*

As teachers we know that we need to provide lessons which are differentiated and provide learning opportunities for all students. We understand the difficulties of providing such opportunities for every student in every lesson without compromising the learning of others and we will show a differentiated lesson in action. Our easy to implement method of differentiation is suitable for all year levels. This work was recently presented at the NCTM in Denver, Colorado.

**Repeated as G19**
F23 Effective Writing in Mathematics

Workshop

Rodney Jones - Chaffey Secondary College, VIC
Mark Ljubic - Chaffey Secondary College, VIC

The use of writing tasks in mathematics has been introduced at Chaffey Secondary College during the past three years. During our presentation we would like to show our colleagues how this can be easily incorporated into your lessons and the benefits associated with students being better prepared to read and interpret questions and the success that students will ultimately have.

Not repeated

F24 Removing the Classroom Lock Step: Maths Pathway

Lecture

Justin Matthys - Maths Pathway, VIC
Richard Wilson - Maths Pathway, VIC

Commercial Presentation

“Maths Pathway” is a new piece of blended learning instructional design - an online tool made by teachers for teachers. It reduces teacher workload by removing lock-step teaching and streamlining planning, assessment and reporting. Academic content is explicitly crafted around local curriculum. In addition to elements of ‘gamification’ and motivation theory, student choice is balanced against accountability. Teacher direction combines with student-set goals to form a calendar of learning tasks, to which students are held accountable. Maths Pathway not only captures and displays data, but also performs analysis to guide the teacher as a coach of students’ personal learning.

Repeated as E21

F25 Promoting Mathematics Learning and Teaching Through Employing Forensic Science (Ear Printing) as a PBL Device

Workshop

Dr Ahmad Samarji - Victoria University, VIC

This session will focus on employing forensic science (ear printing) as a problem-based learning (PBL) device to promote mathematics learning and teaching. The session will be approaching Measurement using a forensic PBL setting. The lesson explored will be suitable for Upper Primary Level with extensions which further develop the lesson to various secondary levels- up to VCE. The aim of the session is to showcase an efficient and powerful pedagogical approach to teach a mathematics topic (Measurement) in a highly interesting and engaging environment which connects to real-life situations and scenarios. Promoting students’ critical thinking and problem solving skills will be amongst the desired outcomes of this approach.

Repeated as C23

F26 Down to Earth with Deadly Maths

Workshop

Jan Cavanagh - Queensland University of Technology, QLD

A great way to grow confidence is to begin with Reality. The RAMR cycle - Reality-Abstraction-Mathematics-Reflection will be demonstrated with measurement as the maths focus. This active learning is designed to motivate and empower under achieving students. Come prepared to get totally involved in challenging hands-on activities.

Repeated as B26

F27 Number Fluency Assessments from a Secondary Perspective

Workshop

Robert Steer - McGuire College, VIC
Axanthe Knott - McGuire College, VIC

This presentation would show teachers how we provide individualised tasks to support learners who are below Year 7 level for maths. This presentation would address the following points:

◊ Why we have chosen the Number Fluency Assessment (NFA) model;
◊ How we conduct NFAs with individual students;
◊ How we plan, train, test, teach and assess on an ongoing basis for a large group setting;
◊ Provide electronic resources to support NFA implementation (including the assessment books, the fluency task library and recording instruments).

Note: Please bring your own laptop for collecting electronic resources.

Repeated as D26
F28 Consumer Classroom – Developing Practical Numeracy Skills Through Consumer Education
Lecture Years 7 to 10
Roslyn Mullins - Consumer Affairs Victoria, VIC
Explore context-based learning through some of the many practical numeracy activities from Consumer Affairs Victoria’s free Maths resource. Consumer activities, including shopping, paying bills and understanding unit prices, provide a broad and relevant context for students to learn, apply and consolidate their numeracy skills. Learn how our Maths resource can assist in meeting numeracy outcomes in the curriculum and discover ways to engage your students with interesting, fun and relevant maths activities that have an everyday application.

Repeated as C27

F29 How We Differentiate Our Classroom With the Use of Data And Technology
Lecture Years 7 to 10
Zoe Christie - Surf Coast Secondary College, VIC
Brad Foss - Surf Coast Secondary College, VIC
At Surf Coast Secondary College how we deliver and plan our differentiated maths curriculum in the Year 7-9 program has changed us as maths teachers for ever. Using pre-test data, Guttman charts and effect sizes to individualise learning programs has allowed us (with the use of technology) to target our teaching to flexible groups of students and confidently manage working at multiple points of need. All our students have access to a digital device (iPad) and we use a number of different apps to enable students to track their own progress, and highlight their next level of work.

Repeated as E30

F30 World Data + Mathematica = Australian Curriculum
Lecture Years 7 to 10
Brian Hodgson - Independent consultant, VIC
Elizabeth Burns - Australian Mathematical Sciences Institute (AMSI), VIC
The rationale for the Australian Curriculum: Mathematics states that “in geography, interpretation of data underpins the study of human populations and their physical environments” and that the curriculum “encourages teachers to help students become self-motivated, confident learners through inquiry and active participation”. In this session we will show you how to design efficient and motivating units focused on geographical and other geometrical aspects of 7 to 10 Mathematics which are consistent with this rationale. Mathematica and Wolfram Alpha will be the IT tools we use to facilitate this. No prior experience with Mathematica is required.

Repeated as E31

F31 Teach Maths for Understanding 7-10
Lecture Years 7 to 10
Dr Ian Lowe - The Mathematical Association of Victoria, VIC
If you are in one of the few schools who have not yet discovered this amazing website, this is for you. Ian Lowe has created Differentiated Unit Plans for all levels. Any teacher can hyperlink to suitable resources to enable learners at all levels to be taught and to learn. Differentiation is of two kinds: open-ended tasks that provide multiple entry and exit points, and targeted teaching and learning (both hands-on and ICT). In this session the secondary levels (7 to 10) will be demonstrated. Commercial (MAV product)

Not repeated

F32 I Cancelled All Maths Classes!
Lecture Years 7 to 12
Erin Gallagher - Mathspace, ACT
2012 was the year to make change happen. In a very traditional public senior secondary system I cancelled math classes, implemented flexible options within the schools static timetable, front-ended curriculum online, challenged our attendance systems, raised the bar, raised expectations, engaged in REAL teaching, REAL learning and the complexity surrounding creating chaos, injected disruption and got results, knocked down walls, reached capacity of our WiFi and had many interesting conversations about what real learning is. After cancelling classes, we have more mathematics going on than ever before. Using my last school as a case study I demonstrate the power of Blended Delivery models and touch on a variety of blended learning and flipped classroom models from around the world.

Repeated as A36

F33 Flipping Out - Screencasting to Reclaim Precious Lesson Time and Extend Your Learners
Lecture Years 7 to 12
Neil Holden - Methodist Ladies’ College, VIC
How can online learning/blended learning be utilised in order to make the best use of classroom time, to develop autonomy in our students, and to provide the most tailored support for students at either end of the achievement
spectrum? You will learn how to organise a unit of work to include blended learning, with a focus on screencasts, including demonstrations and technical hints. You will hear about our successes and failures, and some tricks to make the best of this process in a time- and cost-effective manner.

Note: Bring your laptop.

Repeated as A38

F34 The Australian Curriculum and Mathematica Lecture Years 7 to 12
Carmen Popescu-Rose - Loreto Mandeville Hall Toorak, VIC
Karen Reid - Broadford Secondary College, VIC

This lecture is intended to demonstrate the use of the Mathematica software in teaching mathematical concepts, assessing, and mapping student progress in Mathematics from Years 7-10 levels within the Australian Curriculum. The lecture will show how Mathematica functionality may be used for exploring mathematical concepts for understanding, exploring proofs and theorems for reasoning, assessment for, as, and of learning and formal assessments for fluency and real life applications for problem solving across all secondary school levels from Year 7 to 12.

Note: Optional: Bring your own computer with Mathematica uploaded. A free trial can be downloaded from http://www.wolfram.com/mathematica/trial/

Repeated as D31

F35 Multiple Representations: Using Egyptian Fractions as an Extended Activity Lecture Years 7 to 12
Dennis Fitzgerald - Siena College, VIC
Phillip Knight, VIC

There are advantages in presenting concepts to students in a number of ways and there are also similar benefits in having students investigate a concept using a number of representations. This session will use explore this through the example of using Egyptian Fractions as a way of teaching fraction operations, algebra and problem solving using an open-ended investigation? Participants will get the opportunity to trial some of the approaches and to review other examples.

Repeated as C34

F36 Hints for Young Players Lecture Years 7 to 12
Peter Collins - Mordialloc College, VIC

A lecture/demonstration aimed at inexperienced teachers of high school mathematics. The presenter, having thrown away careers in taxi driving and fruit picking (among others), has spent the past 24 years becoming an experienced half competent? Teacher of Maths. He is currently Maths coordinator at a suburban secondary college. This session is aimed at providing the audience with the benefit of his experience, ie. a journey through his career illustrating what works, what doesn’t and how to survive and thrive with both.

Repeated as E35

F37 Teaching with your iPad Lecture Years 7 to 12
Freda Goddard
Ian Taylor

Commercial Presentation
Doceri is the professional iPad interactive whiteboard and screencast recorder with remote desktop control from SP Controls. This session will showcase how we’ve used Doceri in the classroom and the powerful impact it has had on our lessons. Connect to Doceri Desktop to access, control and annotate over any file or program on your computer. You can create, edit, replay and perfect your lesson or annotated presentation before going to class or recording a screencast. ‘Doceri Remote’ is available free in the iTunes App store. Download a free trial of ‘Doceri Desktop’ at www.Doceri.com. Visit www.teachingwithyouripad.com to see how we use it in the classroom.

Repeated as A45

F38 Resourcing Financial Literacy in Middle School Computer Workshop Years 8 to 10
Anne Nunan - Financial Basics Foundation, QLD
Katrina Birch - Financial Basics Foundation, QLD

The focus of this presentation is a practical workshop tour of our online game ESSI Money, and our teaching resource “Operation Financial Literacy”. ESSI Money is an engaging digital resource which provides an opportunity for middle school students to learn how to better manage personal finances. The game has direct application to the F-10 Mathematics Curriculum - “Money and Financial Literacy” (sub strand in Number and Algebra).
for using financial literacy as a context for Mathematics, and the development of numeracy skills (in the context of General Capabilities) will also be addressed. Financial Basics Foundation is a registered charity established to educate secondary students about the credit system and responsible financial management practices. FBF teaching resources - “Operation Financial Literacy” and “ESSI Money” - are provided FREE OF CHARGE to all Australian secondary schools.

Repeated as D35

F39 A Graph Colouring Book
Lecture
Dr Peter Van der Kamp - La Trobe University, VIC
Dr Tomasz Kowalski - La Trobe University, VIC
We will report on an activity we have set up for Year 9/10 students, which was part of a SEMS (School of Engineering and Mathematical Sciences) showcase event that ran in collaboration with Quantum Victoria. We present a colouring book where students are led to colour graphs whilst being exposed to mathematical questions and applications.

Repeated as E41

F40 Using ABS CensusAtSchool Database for Teaching Statistics on the TI-Nspire
Workshop
Russell Brown - Educational Consultant, VIC
A hands-on session that covers the downloading of data from the ABS CensusAtSchool database and using this data to cover many aspects of the Middle School, General Mathematics and Further Mathematics courses on any TI-Nspire platform. Areas covered will include categorical, including split categories, univariate numerical data analysis, including parallel boxplots, and a full coverage of bivariate data analysis including residual analyses. The ABS database is an ideal starting point for many assessment tasks.

Note: TI-Nspire calculators will be available for this session.

Repeated as C40

F41 Fractals and Logs in Nature
Workshop
Michael Chapman - St Mark’s Anglican Community School, WA
Has the use of CAS calculators made using Logarithms as a calculation tool redundant? In this session we will explore many of the natural occurrences of Logs and why they will always be applicable to the real world. Through this we will see how Logs are linked to the study of Fractal patterns and Fractals in nature. Using the TI-Nspire facilities, we will be able to explore a number of Fractal patterns starting at a basic level and working up to the use of Logarithms.

Repeated as A48

F42 Demonstration of Maritime Engineering Maths in Schools Microsite for Teachers and Students
Lecture
Dr Walid Amin - Australian Maritime College, TAS
Commercial Presentation
With a major reduction in the number of students studying pre-tertiary mathematics, we attempt to motivate and inspire students to continue with their mathematics studies. A new interactive website and package has been developed for both students and teachers, which includes real world applications of integral calculus, differential equations, trigonometry and data analysis, all linked to the current mathematics curriculum for Australian Years 9 to 12. Our presentation will include how to use the new maths in schools microsite to enhance your student's learning in your classroom.

Repeated as C44

F43 Real Data for Unit 3-4 Further Mathematics and Other Year Levels
Computer Workshop
Dana Frantz - Ballarat High School, VIC
Giovanni Liubicich - Ballarat High School, VIC
Starting with Gapminder, then the Bureau of Meteorology, participants will have the opportunity to explore several web sites from which data sets related to the mathematics of the planet earth can be extracted and used to create SACs and other work for their students. These web sites can be used to visually illustrate several Unit 3-4 Further Mathematics statistical techniques such as transforming data and moving averages, Other web sites with ‘real life’ data may also be explored. These sites can be used at a variety of year levels to provide real data sets for your students to work with.

Repeated as D43
F44 Worthwhile CAS Calculator Use in this Year’s 2nd Methods Exam?  
Workshop  
Kevin McMenamin - The Peninsula School, VIC  
Savvy use of the CAS calculator in past Methods 2 examinations has shown it to be advantageous and worth the time and effort in getting to know its workings. Generally half of the multiple choice questions and many parts of the extended answer questions benefit from good calculator skills. This hands-on session will get you using the calculator to see just how helpful (or not) it was with this year’s questions. The most efficient methods will be presented and questions where the calculator should be avoided will be pointed out. The session is suitable for TI-Nspire and ClassPad users and the Casio ClassPad will be the featured CAS.  
Note: Bring along your own calculator. Some ClassPads will be available for loan.  
Repeated as D41

F45 TI-Nspire CAS Notes Application - A Hidden Treasure  
Workshop  
Neale Woods - Distance Education Centre Victoria, VIC  
As one of the seven TI-Nspire CAS applications, the Notes application is much more than a simple text window used to complement the other applications. It is often overlooked by teachers who are unaware of the powerful tools and dynamic linking available in this application. In this session participants will have a hands-on opportunity to learn how to use many of the exciting features of the Notes application.  
Note: TI-Nspire CX calculators will be provided. Participants may elect to bring their own handheld or laptop.  
Not repeated

F46 On Developing Problem Solving Strategies  
Lecture  
Hussein Tahir, VIC  
Conic sections can be used as tools in solving tangency problems related to circles. In this seminar, some historical problems will be considered and use newly developed algebraic and graphical methods to solve them. These methods are based on a new approach to the conics whose efficiency becomes evident when dealing with problems with multiple answers and construction problems related to infinite chains of tangent circles.  
Repeated as A50

F47 How Do We Encourage Students to Get the Right Balance Between CAS and By-Hand in VCE Mathematics  
Lecture  
Sue Garner - Ballarat Grammar, VIC  
Natalie Draper - Ballarat Grammar, VIC  
Commercial Presentation  
The new Casio ClassPad II is a wonderful tool to use in the VCE Maths classroom but we still come across students who use it to draw simple graphs when they would be better to do it quickly by-hand and, in contrast, other students who are afraid to explore the ClassPad in the problems that seem overwhelming for them. This session will outline some approaches that are useful in the classroom when preparing students for VCE examinations using CAS technology. The session will use examples by demonstrating some features of the new colour Casio ClassPad II.  
Not repeated

F48 Improving VCE Results  
Lecture  
Peter Fox - Texas Instruments, VIC  
How high are your students aiming? A student’s perception of their ability is often dangerously educentric. Every year VCAA provide quality collective feedback on examination questions in addition to the achievement of the students in your class. This workshop looks at a selection of VCAA data and how it can be used in the classroom to improve student focus and performance. While the questions and feedback come from VCE level examinations, the principles are applicable to all secondary mathematics levels.  
Note: Sample assessment and feedback materials will be provided.  
Not repeated

F49 Activities for VCE Maths Methods 1-4  
Workshop  
Christine Boyer, VIC  
Commercial Presentation  
Activities have been designed to fit the VCE Maths Methods curriculum. Students work either in pairs or small groups to ‘play’ these activities. This leads to discussions in their language and an enhanced understanding of the
concepts studied. These activities also enable teachers to formatively assess where the students ‘are at’ and ask probing questions, again to increase understanding. The MAV is involved with the production of these materials—

they may not be commercially available at this time.

**Note:** Please bring VCE calculator to this session.

Repeated as B49

F50  Autograph for Year 11-12 (Laptops and Mobiles)

Lecture  

**Douglas Butler - ICT Training Centre (Oundle), UK**

**Commercial Presentation**

Autograph is now available on both laptops and iPads. The tablet version, still evolving, is being designed from scratch to maximize the benefit of the touch environment and its built-in camera. This session will show how Autograph’s friendly operation, coupled with fascinating resources on the web, can be used to add dynamic content directly in the classroom or in easily recorded ‘flipped’ lessons. Calculus topics include introducing differentiation and integration, 3D vectors, volumes of revolution and differential equations. Teaching statistics and probability also offers rich opportunities for visualisation.

**Note:** Bring your laptop or iPad (or both!). Software will be provided or easily downloadable

Repeated as D47

F51  The Use of Mathematics in Actuarial Science

Lecture  

**Dr Colin O’Hare - Monash University, VIC**

Colin O’Hare has worked in the actuarial profession for over fifteen years providing consulting advice to pension scheme trustees and corporate sponsors. His use of mathematics in the context of pricing and reserving for future uncertain cashflows has been essential to that career. For the last 5 years Colin has moved into academia and now designs and delivers mathematical courses at university level in actuarial science. In this presentation he will speak about the mathematics used as an actuary to model topics from population dynamics to forecasting hurricanes, including the wider skills useful for an aspiring actuary to have.

Repeated as G51

SESSION F-G: 10:45am-1:10pm Friday 6th December

F-G1  A Chance To Surprise

Workshop  

**Douglas Williams - Black Douglas Professional Education Services, VIC**

Every lesson is a chance to surprise students of any age with the wonder of mathematics. A chance to captivate, fascinate and absorb them in the process of working like a mathematician. In this workshop we will explore chance-based activities, largely growing from simple game situations, which are suitable for a wide range of ages. We will look for the things which might surprise children and perhaps we will even surprise you. So, you are invited to take a chance to... have fun with colleagues, explore some mathematics, think about teaching craft, discover a new activity.

Not repeated

F-G2  Games in the F-3 Maths Classroom

Workshop  

**Richard Korbosky - ECU/MAWA, WA**

**Commercial Presentation**

The F-3 games have a focus on guided play and mathematics content. The games support essential mathematics learning, teaching and assessment principles, co-operative learning, thinking skills; student centred learning classrooms and differentiation of the mathematics learning environment. The games have been designed to give students an opportunity to have some enjoyment when learning about place value. The number knowledge in the games ranges from early whole number for 5 year olds through to the use of addition, subtraction, multiplication, division, money, some fractions and algebraic thinking for 9 year olds and older students depending on their needs.

Not repeated

F-G3  A3 Maths Mat

Workshop  

**Rob Proffitt-White - Department of Education, QLD**

Teachers will be taken through an A3 maths mat that has been designed from Rob’s action research work with 25 primary and high schools as an Australian Curriculum consultant with the Department of Education and his work lecturing graduate teachers at CQU. The mat takes teachers through 10 minute activities designed to raise awareness of misconceptions, offer teachers essential remediation strategies, builds formative assessment
techniques and brings together the proficiency strands in an fun, engaging way. The mat has also been an essential tool with the Numeracy Coaches in Rob’s region and with his parental engagement program.

*Repeated as A-B1*

**F-G4  Why do I Need to be SunSmart?**

*Workshop*  
Years 1 to 3

**Kate Flack - Warragul Primary School, VIC**  
**Tony Flack - Gippsland Regional Office/Morwell Park Primary School, VIC**

This was the question asked by my grade 1 and 2 students. My response? “Let’s find out!” In helping them find out the answer to this question I found out that investigating weather data is an engaging way for students to make a connection between maths and their life worlds. The question could not be answered and deeply understood without the help of maths that was relevant to students at all development levels. Whilst maths was the content focus of this inquiry, we made natural links into literacy, personal learning and science. In this interactive session participants will explore some of the activities Kate used with her class.

*Repeated as C-D2*

**F-G5  Making Mathematics Visual: The Model Method to Enhance Problem Solving Skills and Foster Pre-Algebraic Thinking**

*Workshop*  
Years 3 to 8

**Yueh Mei Liu - Alpha Academy Pte Ltd, Singapore**  
**Vei Li Soo - Balaklava High School, SA**

Multiplicative thinking and proportional reasoning underpin numeracy skills and mathematics learning at higher levels and teachers need to be equipped with problem-solving strategies which can help students reinforce these basic concepts and apply them to a variety of contexts. The model method is a visually powerful tool that enables students to understand and represent problems pictorially as a precursor to the abstract manipulation in problem-solving. This method has been a key strategy for all primary students in Singapore, especially effective with problems involving whole numbers, fractions and percentages, and ratio, to name a few. It has been used successfully with struggling Mathematics students in an Australian high school.

*Repeated as A-B3*

**F-G6  Using Excel to Create Statistical Displays**

*Computer Workshop*  
Years 3 to 10

**Mary-Anne Aram - Australian Bureau of Statistics, VIC**

The ability to create statistical displays with and without digital technologies is expected in the Australian Curriculum from Year 3 upwards. Students who efficiently use technology to create graphs are equipped to undertake rich statistical investigations. In this hands-on session, participants will learn how to construct frequency tables using the countif function and then use these to construct bar charts and histograms, pie graphs, picture graphs and dot plots. A tool for drawing box plots will also be shown. Authentic data will from the CensusAtSchool questionnaire be used. The session is suitable for teachers with beginner level Excel skills.

*Repeated as C-D3*

**F-G7  Making Maths Irresistible…**

*Computer Workshop*  
Years 3 to 10

**Michelle Button - Mangahigh.com, VIC**  
**Mohit Midha - Mangahigh.com, UK**

*Commercial Presentation*

Make maths irresistible by blending interactive games and clever adaptive quizzes to your lessons - all mapped to the Australian Curriculum. Students are not only engaged, with Mangahigh.com, students’ attitudes towards learning maths and subsequent learning outcomes improve dramatically! Imagine having an assistant that automatically identify gaps in your student’s maths skills, then recommend lessons to bridge these gaps. Imagine setting differentiated tasks to your students seamlessly; then tracking your student's progress instantly (against Australian Curriculum standard). Imagine report writing time, and a summary of your student’s achievements during the year is ready in one report. All this, and more, is possible with Mangahigh.com - Australia’s fastest growing online maths resource. It is easy to use and blends into your lessons effortlessly - come and join us in our session and see it all come to life!

*Repeated as A-B5*
F-G8  How to Teach Decimals Better  
Workshop  
Years 4 to 9

Michael O’Reilly - Mill Park Secondary College, VIC  
Norrian Rundle - Epping Secondary College, VIC

This double session presentation is based on the MY Numeracy Leader Decimals Module, plus much more. We will look at an easy to implement diagnostic test to identify common decimals misconceptions held by students. These misconceptions will be explored, as will a range of teaching strategies to address them. The concrete teaching aid, Linear Arithmetic Blocks (LABs), will be demonstrated. These can be constructed by participants and used to teach place value and decimals. Participants will receive copies of files and handouts, as well as detailed instructions for constructing the LABs.  
**Note:** Participants should bring along a USB Memory Stick.  
**Not repeated**

F-G9  Hands-On Workshop for Mathematica Beginners  
Computer Workshop  
Years 7 to 12

Craig Bauling - Wolfram Research, USA

This introductory workshop will give attendees a hands-on opportunity to create a lesson plan in Mathematica for use within their classroom. The use of ready-made resources as well as the creation of new classroom materials will be shown.  
**Note:** Feel free to bring your own laptops pre-loaded with Mathematica and/or a device to save the materials you create in this workshop.  
**Repeated as C-D6**

F-G10  Just Mathematics 2013  
Workshop  
Years 8 to 12

Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA

Why are you a mathematics teacher? Because you love mathematics? How much time do you currently spend ‘really’ doing mathematics? As much as you would like? Spend this session really doing mathematics. No knowledge of content outside the school curriculum required. The aim? To enjoy yourself and not think about your students. However, I promise what you learn is usable with your students if you wish. [This session is a follow up to the one run on 2012 and will consist of new things to wonder about.]  
**Note:** Please bring whatever you would normally use to do mathematics.  
**Not repeated**

F-G11  A Framework for Developing a Further Mathematics Data Analysis SAC  
Lecture  
Years 11 to 12

Peter Jones - Swinburne University, VIC

Developing a Further Mathematics data analysis SAC can be a challenging task. This workshop introduces the data investigation process as a possible framework for developing a data analysis SAC that is purposeful, statistically meaningful and that enables a wide range of statistical skills to be assessed in the one general context. Bring your own technology.  
**Repeated as A-B11**

### SESSION G: 12:10pm-1:10pm Friday 6th December

**GK1  Strange Tales from the Maths Masters’ Files  
Keynote  
Years F to 12**

Burkard Polster - Monash University, VIC

In 2007 Burkard Polster and Marty Ross began writing the Maths Masters column for The Age newspaper. Six years and 200+ articles on, it seems a good time to reflect upon some highlights of this mathematical journey. In this presentation Burkard will expand upon his top ten favourite stories from the Maths Masters’ files. He’ll highlight the surprising Australian contexts, hilarious (and very embarrassing) bloopers, gruesome murder and, of course, tons of very cool mathematics.

*Burkard Polster is a maths lecturer and Monash University’s resident mathemagician, mathematical juggler, origami expert, bubble-master, shoelace charmer, and Count von Count impersonator. Together he and Marty Ross write the Maths Masters column for The Age, appear at schools, and generally do whatever they can to convince whoever they can that mathematics is beautiful and fun.*
G2 Planning Units of Work to Develop Conceptual Understanding
Workshop
Nancy Surace - Catholic Education Office Melbourne, VIC
Mark Mudge - Catholic Education Office Melbourne, VIC

This workshop will use the content area of fractions to explore the process of how to plan units of work that build students’ conceptual understanding. Starting with the AUSVELS Mathematics Curriculum, we will look at the place of key mathematical ideas common misconceptions, assessment data, rich activities and ways to differentiate them as key elements in developing a unit of work.

Repeated as B5

G3 Differentiation in Planning
Lecture
Julie Hall - Upwey South Primary School, VIC
Gary Monopoli - Upwey South Primary School, VIC

We have made considerable changes to our planning and teaching of Numeracy at Upwey South Primary School. These have led to improvement in our Numeracy results. We would like to share with you the changes we have made. We will provide details of planning and also share some substituting and place value activities we found very effective.

Repeated as H4

G4 POP Maths for the Primary School
Workshop
Georgina Ferencz - Deakin University, VIC

Pop music, pop art, and pop culture are all familiar terms, but how might the essential ideas behind these be applied to our thinking about mathematics? The aim of POP Maths is to develop a broader view of the nature, accessibility and purpose of mathematics, and thereby build more positive attitudes and engagement to mathematics learning. When participating in POP Maths, children are encouraged to recognise that mathematics is ever present in our surroundings, many of our activities, and in the natural environment. In this presentation I will discuss the key ideas of POP Maths and share some examples drawn from the successful POP Maths program conducted in partnership between my mathematics education student teachers and a local primary school.

Repeated as A5

G5 Mathematics Knowledge for Teaching
Lecture
Sue Ferguson - Victoria University, VIC

At Victoria University, the first year mathematics units are underpinned by the concept of Mathematics Knowledge for Teaching (MKT), a notion that involves five elements: procedural knowledge, procedural fluency and flexibility, conceptual understanding, mathematical connections and student thinking. This concept is just as relevant to teachers as it is to pre-service teachers. This workshop will examine MKT and its role in planning and implementing teaching and learning programs in schools. The specific context of number will be used and links will be made to the AusVELS Mathematics. Come prepared to do mathematics!

Repeated as D6

G6 Evernote: Tracking Student Performance
Workshop
Chris Sacco - Melton Primary School, VIC
Lauren Marriott - Melton Primary School, VIC
Michael Portaro - Melton Primary School, VIC

’Evernote’ is an application available on any device (Apple, Windows, iOS and Android). It helps you to ‘remember everything’. Chris and Lauren have used this application to monitor student performance by taking photos, annotating work samples, creating cross-checkers and recording conversations. Throughout this process they have worked with Michael, their Numeracy Coach, to streamline the collection of necessary assessment evidence that informs and improves future teaching. This workshop will demonstrate practical approaches for educators to use in their daily practice that will ensure accountability for all.

Note: Participants will need to bring along a fully charged laptop or mobile device, such as an Apple iPad or Samsung Galaxy Tablet. Please ensure that ‘Evernote’ is installed and that you have created a free account.

Repeated as B7
G7  Introducing Cambridge HOTmaths
Lecture  Years F to 10
VJ Gunawardana - Cambridge University Press, VIC
Victoria Cook - Cambridge University Press, VIC

Commercial Presentation
Are you looking for rich curriculum-based content for your Foundation to Year 10 programs? Would you like Australian Curriculum resources to support your students and your teaching? Do you need to differentiate the learning for your class? At this workshop you will discover some of the fantastic activities, games, investigations and assessment activities available on Cambridge HOTmaths. We’ll also show you how to assign, assess, and manage student work using the powerful learning management system, allowing you to tailor the learning to meet your students’ needs.
Repeated as H6

G8  Keeping it Real: Kids as Virtual Coaches making sense of Real Life Maths (1:1 friendly)
Workshop  Years F to 12
Phill Cristofaro - Flemington Primary School, VIC

One of the three main aims of the Australian Curriculum: Mathematics is that students “recognise connections between the areas of mathematics and other disciplines and appreciate mathematics as an accessible and enjoyable discipline to study”. As virtual coaches, students can use a range of tools to explore the deep connection that exists between statistics, mathematical processes and sport. In this session we will explore the digital tools available to put learners into the Coach’s Box – building their capacity to calculate, use and understand data. This interactive session will provide teachers with ideas to engage their students with real-life maths and empower them to direct their own learning. We will look at how mobile technologies such as iPads and tablets enhance opportunities for creative content creation, collaboration and sharing - strengthening links with other curriculum areas, particularly reading and writing.

Note: Bring a laptop or tablet.
Repeated as E7

G9  Introducing the HP Prime Graphing Calculator
Workshop  Years F to 12
Dr Chris Longhurst - Australian Catholic University/Hewlett Packard, NSW

Commercial Presentation
In this workshop I will introduce the new HP prime calculator, the first touchscreen calculator. This calculator is a very powerful tool for teaching and learning mathematics. I will introduce the HP prime showing its main features and how it can be used to enhance teaching and learning. I will provide worksheets and investigation activities.
Come along and be amount the first in Australia to see this innovative cost effective technology.
Repeated as C7

G10  Mental Computation and Number. Using Games to Effectively Teach Number Facts and Build Numeracy Skills
Workshop  Years 2 to 4
Linda Baron - Education By Design, VIC

This is a hands-on session where we will explore a number of short and easy mathematical games that can be used to engage children in the mixed ability classroom so children can learn, have fun, share their ideas, and evaluate their learning. It is also an opportunity for teachers to observe classroom conversations and support children to reflect on their learning.
Repeated as H11

G11  iPads as a Learning Tool
Workshop  Years 2 to 6
Fiorella Soci - Caulfield Grammar School, VIC
Natalie Erwin - Caulfield Grammar School, VIC

All students in our Year 4 classrooms have their own iPads this year - what do we do with them? This presentation is our journey through the first year of incorporating iPads into the Mathematics curriculum. We will share what we have done and what we have learnt - the good and the not so good.

Note: Bring your iPad along, but not required.
Repeated as F12
Once Upon a Time: Children’s Literature and Mathematics

Workshop

Dr Leicha Bragg - Deakin University, VIC
Ashley Willis - Deakin University, VIC
Jessica Koch - Deakin University, VIC

What was your favourite book as a child? Remember the joy of reading it over and over again. Have you thought about using your favourite book in a maths classroom? Utilising books in maths can engage and benefit every child in your class. Building on children’s love of literature can enhance their experience in maths. Building on children’s love of mathematics can enhance their experience of literature. In this session we will present a range of innovative and stimulating tasks that will have your students noticing maths in every story they read.

G13 Exploring 3-D Geometry From Scratch

Workshop

Dr Brian Doig - Deakin University, VIC

Participants will use simple tools (pencils, scissors) to explore some three-dimensional solids based on tessellations. No knowledge of geometry is needed but a willing pair of hands to ‘give it ago’! All materials will be supplied but participants are urged to bring their own scissors and their favourite sharp black-lead pencil. All constructions are suitable for taking home flattened.

Cooperation in Problem Solving Between Primary and Secondary School Teachers

Lecture

Dr Anne Prescott - University of Technology, Sydney, NSW
Julie Dupuche - DEC, NSW

There are two aspects to problem solving in the mathematics classroom - teaching through problem solving and teaching about problem solving. Teaching through problem solving means that novel, interesting and challenging problems are a natural part of mathematics, while teaching about problem solving scaffolds problem solving by providing strategies. Students need to know both aspects in order to be successful problem solvers. This presentation will show how combining the problem solving expertise of both primary and secondary teachers through cooperative planning and implementation of lessons, students see mathematics in a different light as they learn about and through problem solving.

What Makes the Money World Go Round!

Workshop

Shane O’Connor - VCAA, VIC

The need for students and teachers to have greater consumer and financial numeracy is a critical issue! The MoneySmart Teaching Project is a national effort to address the low levels of consumer and financial numeracy. The project has trialled seven very engaging units that cover Years 4-10. The units are aligned to AusVELS and the Australian Curriculum. This workshop will showcase these seven, ready to go units. Participants will receive copies of all seven units, as well as their own financial health check up!

Measurement and Technology - Using Data Loggers

Workshop

Daniel Avano - Museum Victoria/Scienceworks, VIC
Simon Keily - Museum Victoria/Scienceworks, VIC

Data loggers are a great tool to introduce students to maths topics such as graphing and measurement. Using data loggers in the classroom, real-life data can easily be collected by students leading to some meaningful and relevant investigations of the real world. This session will show you how these ICT tools can be used by students to draw connections between real world variables that they are investigating and the properties of graphs. If you have not used data loggers in the maths classroom before, this session will introduce you to some new ideas. Participants will also be given a quick overview of new maths resources available from Museum Victoria.

Chocolate, Ratio, % and Multiplicative Thinking!

Workshop

Christine Lenghaus - Huntingtower, VIC

Four blocks of chocolate are in front of you - a 50, 55, 200 and 350 gram blocks. From which block would you choose a cubicle (piece) of chocolate, why? How do the students calculate the mass of one piece of chocolate in each of the blocks? Why do you need to be able to think multiplicatively to solve ratio problems – can’t you
just subtract? My presentation is this year’s journey in teaching Year 8 classes about ratio, multiplicative thinking and double number lines (as preparation for teaching percentage). An alternative teaching of ratio with many of examples you can use in class. Chocolate may be tasted in this workshop.

**Note:** Bring a memory stick if there are any of the lesson ideas that you would like to copy.

**Repeated as H16**

**G18 Tips and Tricks for Having Your Students Feeling They Are Maths Geniuses**

*Lecture*  
*Years 5 to 9*  
*Robert Rook, TAS*

**Commercial Presentation**

In this session I will present some of the techniques that can be applied to solve what would appear to be difficult maths problems to your students (and to a lot of adults) so that you (yes really mean you) can solve them simply and have you feel comfortable to show your students. These tricks work and will definitely see your students’ confidence soar immediately. You can present them with problems they can solve in their heads, something that they would never have thought possible.

**Repeated as F21**

**G19 Implementing a Differentiated Curriculum in Your Classroom – A Practical Solution**

*Lecture*  
*Years 5 to 10*  
*Jodie Parsons - Staughton College, VIC*

*Yvonne Reilly - Sunshine College, VIC*

As teachers we know that we need to provide lessons which are differentiated and provide learning opportunities for all students. We understand the difficulties of providing such opportunities for every student in every lesson without compromising the learning of others and we will show a differentiated lesson in action. Our easy to implement method of differentiation is suitable for all year levels. This work was recently presented at the NCTM in Denver, Colorado.

**Repeated as F22**

**G20 Some Key Ideas in Teaching Statistics in the Primary and Middle School Years**

*Lecture*  
*Years 5 to 10*  
*Dr Max Stephens - The University of Melbourne, VIC*

The Australian Curriculum Mathematics (2010) [AusVELS (2012)] emphasises the importance of using data, extracting information from data, and recognising variability in data. The same key ideas are present in the treatment of Statistics in China’s (2011) National Curriculum Standards for Mathematics This presentation will look briefly at both documents and explore implications for teaching and learning key statistical ideas, such as sampling and variability, especially how these key ideas can be made accessible to students in the middle years through the use of ICT.

**Not repeated**

**G21 The ABC of Mathematics. Who Needs a Maths Dictionary?**

*Lecture*  
*Years 5 to 10*  
*Gael McLeod - Pearson Publishing, VIC*

*Sophie Matta - Pearson Publishing, VIC*

**Commercial Presentation**

Are you a primary teacher teaching maths to the Australian Curriculum and unsure how to properly explain maths terms? Are you a secondary teacher teaching maths outside your area of expertise and need support? Do you teach student who have literacy difficulties or are EASLD students? Are you a librarian looking for accurate and informative maths reference material? Pearson has a solution to your problem. The newly published Pearson Illustrated Maths Dictionary 5th Edition has updated the 4th Edition to include the Australian Curriculum, photos, more accurate definitions, comprehensive examples, coloured tabs for easier navigation and is compatible with the Pearson Maths 7-10 student books. This book will be of enormous assistance to anyone teaching maths who is not maths trained, to students with poor English skills and parents who are out of touch with mathematical terminology. Come and find out how it may benefit you.

**Repeated as B25**

**G22 Simple Changes Leading to Big Class Outcomes: A Better Form of Feedback**

*Lecture*  
*Years 5 to 11*  
*Anthony Fowler - Warracknabeal Secondary College, VIC*

*Kate Mongan - Warracknabeal Secondary College, VIC*

Starting in early term of 2013, maths teacher at Warracknabeal Secondary College began to give students their effect size, rather than a raw mark as feedback. This led to a massive improvement in their learning, confidence and engagement, leading to significantly improved student outcomes. Find out the easy steps required to bring your
classroom focus back to improvement. This presentation will explain the calculation of effect sizes, the classroom protocols used to implement the program and evidence of significantly improved student engagement and outcomes.  

Repeated as E23

G23  Down To Earth Mathematics  
Workshop  Years 5 to 12  
Leigh Thompson - Glenvale, Bairnsdale Campus, VIC  
Luke Blythman - Victoria University, VIC  
How far is it around the earth? This question can elicit a wide range of responses. It can open up more issues such as the definition of a metre, equatorial circumference, polar circumference, great circles, meridians of longitude, parallels of latitude, bearings and how far is it to the centre of the earth. As the earth has a near circular orbit and is almost spherical, circle properties and pi arise. Further asking what does the size of the earth have to do with the size of a sheet of A4 paper is usually met with bewilderment? This presentation uses pen and compass to understand pi, shows how algebra and the earth’s circumference are related to A, B and C series paper size and more. It aims to tap into the curiosity of students.  
Note: Please bring a USB flash drive or similar to obtain copies of resources (including movies). Scissors, glue and a drawing compass may be useful if you can bring them.  
Repeated as H20

G24  Mathemagical Marvels to Liven Up Lessons  
Lecture  Years 6 to 12  
Andrew Wrigley - Somerset College, QLD  
An interactive and entertaining stroll through a variety of mathematical ideas to spark interest and discussion. Basic number operations, algebra, geometry and probability are covered and a calculator will be useful. Participants will be invited to share their own ‘tricks of the trade’.  
Repeated as H23

G25  Using Mini-Whiteboards and Card Matching Puzzles to Challenge Students’ Mathematical Thinking  
Workshop  Years 6 to 12  
Samantha Horrocks - Werribee Secondary College, VIC  
This session is based on the work “Improving learning of mathematics: strategies and challenges” by Professor Malcolm Swan. The session will involve looking at how mini-whiteboards can be used in class to promote learning through formative assessment and drafting thinking. The second half of the session will focus on different types of card matching activities to promote discussion and more active learning amongst students. This will include an introduction to creating your own card matching activities using the free online Tarsia software.  
Not repeated

G26  The Joy of Informatics  
Lecture  Years 6 to 12  
Jan Honnens - Christ Church Grammar School, WA  
Informatics is the mathematics related to computer programming and includes topics such as networks, logic and algorithms. In this session we will go through some of the past questions from the Australian Informatics Competition and appreciate the relevance and elegance of this kind of modern mathematics.  
Note: Participants will benefit from having attempted the practice papers available at www.amt.edu.au/aicsample. html prior to the session.  
Not repeated

G27  Arithmetika - The Ultimate Formative Assessment Solution  
Computer Workshop  Years 6 to 12  
Tony Allan - Daramalan College, ACT  
Commercial Presentation  
What makes Arithmetika exercises special? They are different every time! The same questions, but in a different order and with different numbers. No familiarity breeding contempt. Not only that; students have to respond with real mathematical answers, not just numbers and multiple-choice selections. Algebraic expressions, equations, coordinates, two-solution answers, fractions and many more types of answer may be entered by students. Accuracy, units are all checked. What’s more, every question is linked to handy hints and from there to the exact page of an e-book. And for you, all the marking is done automatically. Come to one of the workshops to see for yourself!  
Not repeated
G28  SpyClass: An Adventure in Game-Based Learning
Workshop  Years 7 to 8
Evan Curnow - Jacaranda, VIC
Brent Ramsay - Jacaranda, VIC

Commercial Presentation
SpyClass is an online game combining comic book-style art with problem-based learning to allow mathematics students to hone their problem solving skills in an exciting and immersive environment. By completing a series of tasks, the student assists the games’ protagonists; three teenage spies named Dan, Jesse and Toby, to fulfil a range of missions set in exotic locales. SpyClass transports students beyond the classroom while giving them challenges that are firmly based on the Australian Mathematics Curriculum.

Note: Please bring either a laptop or a tablet computer to experience SpyClass first hand.
Repeated as H24

G29  What’s an English Teacher Doing in a Mathematics Classroom?
Lecture  Years 7 to 10
Dr Ray Williams - St Mark’s Anglican Community School, WA

This session will outline the exciting consequences of seriously integrating Mathematics and English by a teacher from each discipline as part of bigger pedagogical project. Key areas of the English Curriculum of Picture Books, Poetry Analysis, Satirical Story and a Novel were explored in the mathematics classroom providing unexpected and eye-opening results for both teachers involved.
Repeated as C28

G30  Infusion of Games Based Learning with Food: An Innovation in Mathematics Education
Lecture  Years 7 to 10
Dr Philip Button - Button Food Science & Nutrition, VIC
Dr John Lenarcic - RMIT University, VIC

Food science is a multidisciplinary science in which all science and mathematics disciplines are applied to the manufacture and distribution of food. Games based learning is a novel approach in teaching utilising a gaming environment to enable a higher level of student engagement and motivation compared to traditional instructional techniques. Packing order and ratios are particularly suited to this innovative pedagogical approach. A range of conceptual ideas shall be presented, utilising games-based teaching of mathematics within the umbrella of food science, food technology and nutrition, which offer exciting possibilities to engage students with real-life scenarios.
Repeated as A33

G31  Autograph for Year 7-10 (Laptops and Mobiles)
Lecture  Years 7 to 10
Douglas Butler - ICT Training Centre (Oundle), UK

Commercial Presentation
Autograph is now available on both laptops and iPads. The tablet version, still evolving, is being designed from scratch to maximize the benefit of the touch environment and its built-in camera. This session will show how Autograph’s friendly operation, coupled with fascinating resources on the web, can be used to add dynamic content directly in the classroom or in easily recorded ‘flipped’ lessons. Year 7-10 topics to be covered from the new Curriculum include: Number/Algebra (linear/non-linear relationships), Measurement/Geometry (trigonometry), and Statistics/Probability (data representation/interpretation).

Note: Bring your laptop or iPad (or both!). Software will be provided or easily downloadable.
Repeated as C30

G32  Teaching Mathematics Through Geometry: An Integrated Approach Using MATHOMAT and SKETCHPAD Software
Workshop  Years 7 to 10
John Lawton - Objective Learning Materials, VIC
Michael O’Connor - St Francis Xavier College, VIC
Kristine Blacksell - St Martins Lutheran College, SA

Commercial Presentation
This workshop demonstrates some ways of teaching middle school mathematics through geometry. Our approach deepens student understanding by replacing rote text book activities with a more interesting open ended approach. A new lesson series by Michael O’Connor and Henri Picciotto will be demonstrated through a hands-on approach. These lessons make integrated use of commonly available materials such as the MATHOMAT template, THE GEOMETERS SKETCHPAD software and pattern blocks. The lessons have been trialled at St Martins Lutheran College in Mt Gambier during 2013 by Kristine Blacksell who will discuss this experience during the session.
Not repeated
G33  A Prime Time with Mathematica

Computer Workshop
Dr David Leigh-Lancaster - VCAA, VIC
Antje Leigh-Lancaster, VIC

In this session we will consider how the number functionality of a computer algebra system such as Mathematica can be used to support exploration of prime numbers in the secondary curriculum. This will be done using a combination of prepared interactive files (notebooks) which the user edits and evaluates or manipulates and direct computation of examples which the user constructs. Some related Demonstration Projects from Wolfram Research will also be looked at. Previous experience with Mathematica is not required. However some familiarity in working with mathematical software in a windows environment would be helpful.

Note: Participants should bring along a USB if they wish to be able to copy notebook files from the workshop.

Repeated as A37

G34  Mathematica, An Introduction to Some Secondary (All Levels) Classroom Activities

Computer Workshop
Ian Willson, VIC

This workshop will provide to those with little or no previous experience of Mathematica an introduction to what it is, what it can do and how secondary students can use it as both a computational and discovery tool (an arguably cheaper and better alternative to the CAS calculator). Activities will be provided for use in the workshop and for classroom use back at school. Areas covered will include: basic algebra, statistics, functions and graphs, circular functions, calculus and probability. The Manipulate function will be demonstrated (the Mathematica equivalent to CAS slider functionality).

Note: Participants require access to Wolfram Mathematica software, either on their own laptop or at their computer lab workstation (if the software is available on the network).

Repeated as A42

G35  Career Development as the Business of Maths

Workshop
Mary Harrington – DEECD, VIC

Rapid changes to learning and work in today's world make it essential that young people and their Maths teachers take a more active role in their career development. In this workshop the Victorian Careers Curriculum Framework will be explored in context of the Mathematics curriculum. Linking the VCCF to Maths can help focus young people's attention on recognising or creating opportunities, making informed choices and defining and achieving their career goals. This can inform Career Action Plans that reflect their increased learning and possible future actions. The workshop will include tools and resources to open up career opportunities related to Mathematics. http://www.education.vic.gov.au/school/teachers/teachingresources/careers/carframe/Pages/aboutframework.aspx

Repeated as A43

G36  Using Mathematica and CDFs - A Basic Approach

Lecture
Gary Bass - Macleod College, VIC

Mathematica is provided freely to many schools through a Vic Government rollout. Very few teachers are aware of the potential for Mathematica to demonstrate mathematics concepts and provide interactive content for online on demand learning. This session will: outline basic Mathematica functions; illustrate some practical uses; demonstrate the interactive CDF and provide sources of further information about Mathematica. Participants will be provided with links to source code, basic instructions and examples of interactive CDFs.

Note: Mathematica is currently a WIN 7/8 or OSX application which uses Flash. IOS was promised in 2012 and shall be included if available. Optional: Bring laptop.

Repeated as B36

G37  Positive Education in the Mathematics Classroom

Lecture
Stephen Andrew - Geelong Grammar School, VIC

This presentation will explore the possibilities for using Positive Education principles and practices in the Mathematics Classroom. It will focus on practical applications that have been found to work.

Repeated as C32
G38  Going SOLO in Mathematics Workshop

  *Diane Farrell - John Monash Science School, VIC*
  *Kimberley McGillivray - John Monash Science School, VIC*

How do you ensure that students know where they are in their learning and more importantly how they can improve? What happens when they get stuck? Are they sitting waving their hands waiting for you to get them unstuck? Diane and Kim have been tackling these universal issues in the maths classroom using the shared language of the SOLO Taxonomy. In this interactive workshop Diane and Kim will share how they enable learners to take ownership of their learning using SOLO based graphic organisers and moving on maps, engaging learners in self-reflection and empowering individuals to take control of their learning.

*Repeated as H34*

G39  Learning Experiences with Quadratic Function and Curve Lecture

  *Yew Fook Chan - School of the Arts, Singapore*

The workshop session is on the topic of Graphs of Quadratic Function. Teachers will gain an understanding on the rationale and considerations in designing appropriate learning experiences for students and obtain ready-made learning experiences lessons for immediate use. Students will have opportunities to:

a) Show graphically the relationship between the area of a circle and its radius and explain that the relationship is a function, but not a linear function.

b) Use a graphing software or calculator to study how the shape of the graph for \( y = ax^2 + bx + c \) changes when either \( a \), \( b \) or \( c \) varies.

*Note: Please bring TI-Nspire Graphing Calculator, if you have one, to receive and download the TNS files that will be provided by the presenter.*

*Repeated as C37*

G40  Mathematica - The Classroom Utilities Package Lecture

  *John Fitzherbert - Loreto Mandeville Hall Toorak, VIC*

There are many add-on packages available for Mathematica. One of the most useful of these in secondary school is called ClassroomUtilities` (yes, the prime is part of the name!). This session will examine the new commands enabled by the ClassroomUtilities` package, how to enable the package, how to use the new commands and suggestions for where these may find a useful place in the teaching and assessment of mathematics in Years 8 to 12 with a focus on the VCE years.

*Note: Participants may wish to bring a laptop with Mathematica installed. This is not compulsory however.*

*Repeated as D37*

G41  Will the MOOC’s Tsunami Engulf Secondary Mathematics Education? Lecture

  *Dr Brenton Groves - Independent Researcher, VIC*

Massive Open Online Courses (MOOC) are the biggest paradigm shift in the history of tertiary education but a student-directed connectivist-education ensures a difficult future for tertiary academics. The reverse is true for teachers. They can increase your understanding of a subject, cover new topics and keep that gifted student in the back of the room busy. Individual MOOC topics have discussion groups that expand your classroom to the whole world. They are free so the main investment is your (very valuable) time. The Conference Proceedings index some of the immense resources of the MOOC world to compliment this lecture.

*Repeated as A47*

G42  Using STELR Science Resources for Applications of Mathematics Lecture

  *Dr Ian Lowe - The Mathematical Association of Victoria, VIC*

Maths teachers who also teach science will know of the STELR books and kits: Renewable Energy. This year MAV has used these resources to create mathematical extensions, which now are available from the STELR website www.stelr.org.au. The units created include Global warming, Ohm’s law, Bouncing ball, and Positioning solar panels. In addition the STELR project has developed a means for monitoring the electricity generated in solar panels mounted on school roofs. This enables several interesting mathematical questions to be asked, leading to a better understanding of solar power generation, and, incidentally, of calculus. See http://solar.stelr.org.au>.

*Not repeated*
G43 Strategies for Problem Solving

Workshop

Associate Professor Susie Groves - Deakin University, VIC

While Problem Solving is identified as one of the four Proficiency strands in the Australian Curriculum, there is little evidence of the type of problem solving included in the Working Mathematically dimension of VELS. This workshop focuses on ways in which teachers can develop their students’ sense of mathematical inquiry through mathematical activities that focus on problem solving skills and strategies.

Not repeated

G44 Problem Solving With a ‘Leg Up’ From Technology

Workshop

Kevin McMenamin - The Peninsula School, VIC

Once a mathematical problem is ‘seen’, invariably it can be solved. The use of spreadsheets, (dynamic) images and concrete aids can help to ‘open your eyes’ to the mathematics embedded in the question somewhat quicker than standard approaches. This session will explore some problems that are helped via a ‘leg up’ from the technology and then how they can be converted into a generalised solution. Devices with spreadsheet and dynamic image capabilities will be available for use.

Note: Bring along your own device or some ClassPads will be available for loan.

Not repeated

G45 Furthering Use of Mathematica as a CAS Tool

Lecture

Brian Hodgson - Independent Consultant, VIC

The use of Mathematica as a CAS tool in Mathematical Methods has been consolidated by the VCAA trial being conducted in which students submit their examination responses directly via a Mathematica workbook version of their examination. Mathematica is a permitted CAS tool for all VCAA Mathematics examinations so why not use it in Further Mathematics both as a teaching tool and in student assessment? This session will illustrate how effectively Mathematica can be used to answer the 2012 papers and the power it has to assist teachers in presenting the Further Mathematics course. No prior experience with Mathematica is required.

Repeated as C45

G46 Working in the Classroom with the New ClassPad fx-CP400 CAS Calculator

Workshop

Charlie Watson - The Tuition Centre, WA

This workshop is for teachers to develop their skills with the new, colour, Casio ClassPad fx-CP400 CAS calculator. We’ll try new functions, explore the new keyboard and menu layouts and see how easy it is now to load apps from either a PC or Mac computer. We’ll also briefly look at how to update eActivities and programs to run smoothly on the new model. Participants are assumed to have a reasonable working knowledge of the old ClassPad to keep up with the hands-on activities, but if you don’t, just come along, sit back and see what's possible.

Note: Bring your own new model ClassPad handheld or computer with emulator if possible, but there will also be loan models to borrow.

Repeated as H36

G47 Graphing Gallery With the TI-Nspire CAS Calculator

Workshop

Shane Dempsey - Baimbridge College, VIC

A Graphs page on the TI-Nspire provides many different options. During this hands-on session a number of uses, particularly those relevant to Mathematical Methods Units 1-4, will be covered.

Note: Spare TI-Nspire CAS calculators will be available.

Repeated as H37

G48 Four Interesting and Useful Theorems About Polynomials

Lecture

John Kermond - John Monash Science School, VIC

Four little-known theorems involving polynomials that have interesting and useful applications in the typical senior secondary school mathematics curricula are stated, proved and illustrated with examples. The theorems, proofs and examples provide ideas that could be applied to many types of assessments including School Assessed Coursework.

Repeated as B46
G49 Planning and Assessing SACs in VCE General/Further Mathematics

Lecture

Sandra Wright - Hoppers Crossing Secondary College, VIC
Ronda Hazell - Hoppers Crossing Secondary College, VIC

We have developed a spreadsheet with key knowledge and skills for each area of study and topic. This information is then used to plan a SAC task/s that is designed to cover as much of the required skills and knowledge in a comprehensive and balanced manner as possible. This is also the basis for a spreadsheet that is used to both mark and provide feedback to students. This is aimed at teachers who are new to teaching VCE Mathematics.

Repeated as H39

G50 Introduction to Computer Aided Assessment of Secondary School Mathematics Using MapleTA

Computer Workshop

Professor Bill Blyth - Australian Science & Engineering Solutions (ASES) and RMIT University, VIC
Dr Asim Ghous - Australian Science & Engineering Solutions (ASES), NSW

Commercial Presentation

MapleTA is the major Computer Aided Assessment system for courses using mathematics. MapleTA has very many features and (invisible to the student) uses Maple as its Computer Algebra System, CAS. MapleTA keeps full records of student results and communicates directly with most Learning Management Systems. Large banks of routine questions are freely available. Some questions with advanced graphics, multiple parts and testing Higher Order Thinking Skills will be shown. Participants are invited to bring their own laptop; with internet connection, they’ll be encouraged to work collaboratively (in small groups) on some calculus MapleTA assignment or to author a MapleTA question.

Note: Bring your own laptop with wireless internet - fully charged.

Repeated as C48

G51 The Use of Mathematics in Actuarial Science

Lecture

Dr Colin O’Hare - Monash University, VIC

Colin O’Hare has worked in the actuarial profession for over fifteen years providing consulting advice to pension scheme trustees and corporate sponsors. His use of mathematics in the context of pricing and reserving for future uncertain cashflows has been essential to that career. For the last 5 years Colin has moved into academia and now designs and delivers mathematical courses at university level in actuarial science. In this presentation he will speak about the mathematics used as an actuary to model topics from population dynamics to forecasting hurricanes, including the wider skills useful for an aspiring actuary to have.

Repeated as F51

SESSION H: 2:10pm-3:10pm Friday 6th December

HK1 The Future for Mathematics Education in Australian Schools

Keynote

Dr Mary Coupland - AAMT, NSW
Allason McNamara - The Mathematical Association of Victoria, VIC

There is a great deal of focus nationally and internationally on both the importance of STEM education, and how it needs to be improved. The aim for a ‘top five’ place for Australian students by 2025 brings this into sharp focus for teachers of mathematics. What are the pressing needs and challenges? What directions can and should be taken in the light of these? How can teachers’ voices take a leading role in shaping the future for mathematics in our schools? This panel will present different perspectives of respected practitioners and others who will help focus your attention and effort on these important matters.

H2 Authentic, Play Based Maths in the Early Years

Workshop

Caroline Barnett - Swinburne Prahran Community Children’s Centre Co-op, VIC
Liz Kennedy - Swinburne Prahran Community Children’s Centre Co-op, VIC
Ramila Sadikeen - Swinburne Prahran Community Children’s Centre Co-op, VIC

The development of numeracy skills begins in the early years through play. Two educators working in a 3-4 year old kinder will share how they have incorporated numeracy into a play based, early years environment. A range of activities will be explored that stimulate an authentic interest in numbers, shapes and measures to promote a numeracy rich environment.

Repeated as A3
H3  Problem Solving Strategies Through the Lens of the Australian Curriculum  
Workshop  
Richard Korbosky - ECU/MAWA, WA

In the modern world there are many problems to solve. Students need to acquire a range of strategies that allow them to tackle everyday problems in a variety of ways. What are the strategies that should be in their problem solving toolbox? In this session the foci will be on mathematical language, links to problem solving strategies, reasoning and word problems. The critical mathematics in this session will be linked to the Australian Curriculum.  
Not repeated

H4  Differentiation in Planning  
Lecture  
Julie Hall - Upwey South Primary School, VIC 
Gary Monopoli - Upwey South Primary School, VIC

We have made considerable changes to our planning and teaching of Numeracy at Upwey South Primary School. These have led to improvement in our Numeracy results. We would like to share with you the changes we have made. We will provide details of planning and also share some substituting and place value activities we found very effective.  
Repeated as G3

H5  The Big Ideas in Number: 1 Small Step for a School, 1 Giant Leap in Mathematical Reform  
Lecture  
Amanda McLean - River Gum Primary School, VIC 
Margaret Dolan - River Gum Primary School, VIC 
Robyn Trzeciak - River Gum Primary School, VIC

In Victoria we are undergoing the third wave of reform (Towards Victoria as a Learning Community). The aim of this reform is achieving system wide excellence, so that Victorian schools can achieve global top tier performance. Schools are encouraged to look to evidence based models for teaching practice, leadership, curriculum and assessment. Here at River Gum Primary School we have designed and implemented a whole school framework for teaching mathematics based on the Big Ideas in Number research of Professor Dianne Siemon. We also draw upon other researchers such as John Hattie with a focus on building professional practice. In our session we will discuss the tools we created, links to research, key stages of implementation, and how this relates to school-wide reform.  
Not repeated

H6  Introducing Cambridge HOTmaths  
Lecture  
VJ Gunawardana - Cambridge University Press, VIC 
Victoria Cook - Cambridge University Press, VIC

Commercial Presentation

Are you looking for rich curriculum-based content for your Foundation to Year 10 programs? Would you like Australian Curriculum resources to support your students and your teaching? Do you need to differentiate the learning for your class? At this workshop you will discover some of the fantastic activities, games, investigations and assessment activities available on Cambridge HOTmaths. We'll also show you how to assign, assess, and manage student work using the powerful learning management system, allowing you to tailor the learning to meet your students’ needs.  
Repeated as G7

H7  Maths in Malawi  
Lecture  
Dr Ian Lowe - The Mathematical Association of Victoria, VIC

Many teachers responded with interest to the article with this title in Vinculum early in 2013. Ian has a PhD gained by studying primary maths teaching in the small African country of Malawi. In 2005. If you think your class is too large, wait till you see these! As a result he now visits Malawi each Easter training teachers at both primary and secondary levels. He has now written four textbooks (with teacher guides) for upper primary, and is currently writing for secondary school. This talk will share his passion with pictures and stories.  
Not repeated

H8  Building Family School Partnerships with Maths and Robotics  
Workshop  
Nathaniel Bradshaw - Caroline Chisholm Catholic College, VIC

Caroline Chisholm Catholic College is a coeducational Catholic Secondary School in Braybrook, Victoria. For the last three years the College has successfully run regular Middle Years Maths sessions for families in the evenings and has also started up a team of families who regularly compete in Robotics competitions. This session will share
strategies used when communicating with families and there will also be a robotics demonstration.

**Repeated as A15**

**H9  Maths Partnerships Really Count**

Lecture  
*Dr Gill Lunniss - CSIRO, VIC*
*Kate Maiden - CSIRO, VIC*

Scientists and Mathematicians in Schools (SMiS) is a national program that creates and supports ongoing partnerships between volunteer scientists, mathematicians and teachers. In this session, hear about Mathematicians in Schools partnerships including activities they are doing together and impacts of the partnership on themselves and their students. Find out how the partnerships enhance classroom learning and encourage students to appreciate real world practice and impact of mathematics. Participants will hear about what makes for effective and successful partnerships. Plus, discover other CSIRO resources you can use to provide a window into the exciting world of maths in action.

**Not repeated**

**H10  Beyond the Tip of the Iceberg**

Workshop  
*Douglas Williams - Black Douglas Professional Education Services, VIC*

A mathematician’s work begins with an interesting problem. Therefore in a curriculum built around learning to work like a mathematician, students will often be invited to begin their work in this way. Hands-on problem solving tasks from Mathematics Task Centre are the world’s largest source of such interesting starting points and offer much more than the tip of the puzzle described on the card. In this workshop you will explore a sample of these tasks and find out about their depth, their multiple lives, stories of success from experienced colleagues and the web support provided by Mathematics Centre.

**Not repeated**

**H11  Mental Computation and Number. Using Games to Effectively Teach Number Facts and Build Numeracy Skills**

Workshop  
*Linda Baron - Education By Design, VIC*

This is a hands-on session where we will explore a number of short and easy mathematical games that can be used to engage children in the mixed ability classroom so children can learn, have fun, share their ideas, and evaluate their learning. It is also an opportunity for teachers to observe classroom conversations and support children to reflect on their learning.

**Repeated as G10**

**H12  Teachers 4 Teachers Maths Box Orange**

Workshop  
*Debbie Reinholtd - Fleetwood Primary School, VIC*
*Sarah Peterson - Fleetwood Primary School, VIC*

The Teachers 4 Teachers team have developed an exemplary mathematics resource for students in Years 3 to 5. Maths Box Orange is intended to guide and support teachers in developing the mathematics curriculum. Problem solving features strongly and the material can easily cater for a range of student needs. Maths Box Orange has 30 topics that are aligned with the Australian National Mathematics Curriculum. Each student is presented with a Card on a given topic with a range of mathematical questions. The elements of mathematics are developed sequentially as the student progresses through the topic in the given colour set.

**Repeated as A17**

**H13  Once Upon a Time: Children’s Literature and Mathematics**

Workshop  
*Dr Leicha Bragg - Deakin University, VIC*
*Ashley Willis - Deakin University, VIC*
*Jessica Koch - Deakin University, VIC*

What was your favourite book as a child? Remember the joy of reading it over and over again. Have you thought about using your favourite book in a maths classroom? Utilising books in maths can engage and benefit every child in your class. Building on children’s love of literature can enhanced their experience in maths. Building on children’s love of mathematics can enhanced their experience of literature. In this session we will present a range of innovative and stimulating tasks that will have your students noticing maths in every story they read.

**Repeated as G12**
H14  What Makes the Money World Go Round!
Workshop
Shane O'Connor - VCAA, VIC
The need for students and teachers to have greater consumer and financial numeracy is a critical issue! The MoneySmart Teaching Project is a national effort to address the low levels of consumer and financial numeracy. The project has trialled seven very engaging units that cover Years 4-10. The units are aligned to AusVELS and the Australian Curriculum. This workshop will showcase these seven, ready to go units. Participants will receive copies of all seven units, as well as their own financial health check up!

Repeated as G15

H15  Eight Strategies for Dealing with Differences in Student Readiness to Learn Mathematics
Lecture
Professor Peter Sullivan - Monash University, VIC
All classes are mixed in student ability. This session will present eight strategies for teaching mathematics that cater for the diversity in student readiness to learn. Examples of classroom lessons, relevant to the years 4 to 10, of each of the strategies will be presented and discussed.

Not repeated

H16  Chocolate, Ratio, % and Multiplicative Thinking!
Workshop
Christine Lenghaus - Huntingtower, VIC
Four blocks of chocolate are in front of you - a 50, 55, 200 and 350 gram blocks. From which block would you choose a cubicle (piece) of chocolate, why? How do the students calculate the mass of one piece of chocolate in each of the blocks? Why do you need to be able to think multiplicatively to solve ratio problems - can’t you just subtract? My presentation is this year’s journey in teaching Year 8 classes about ratio, multiplicative thinking and double number lines (as preparation for teaching percentage). An alternative teaching of ratio with many of examples you can use in class. Chocolate may be tasted in this workshop.

Note: Bring a memory stick if there are any of the lesson ideas that you would like to copy.

Repeated as G17

H17  Speedy Maths - A Lesson in Fluency
Workshop
Thao Huynh - Sunshine College, VIC
Victor Vu - Sunshine College, VIC
Tim Purcell - Sunshine College, VIC
Here is an opportunity to explore a range of activities that have been created and used during the middle years in secondary school classes, in order to build fluency and create sound mental models for maths. Differentiated and successfully engaging, these fun and exciting activities have been valuable in improving students’ efficiency, speed and accuracy when dealing with numbers.

Repeated as F20

H18  Engage Your Students With a Problem Solving Relay!
Workshop
Maggi Gunn - Brisbane Girls Grammar School, QLD
A problem solving relay can be used to review a topic or as a fun mathematical thinking and problem solving activity at the end of term. The resource used in the session will be appropriate for Years 7-10, however bring along your USB to take away a template so you can easily develop your own problem solving relay relevant for any age or ability level.

Not repeated

H19  Hanlon’s Handy Hints!
Lecture
Stephen Hanlon - Braemar College, VIC
A collection of mathematical tricks, curios and hints to inspire, engage, bemuse, provoke thought, promote discussion and investigation, or just to entertain and amuse. All have been accumulated from various sources over the years and used in classes with students of all ages. They can be used as a warm-up activity or to spice up a lesson. Come and try for yourself, and see how and why they work. Most require no more than a pen, paper and perhaps a calculator from your audience, and a little mental arithmetic (or mathemagics) from you.

Note: Please bring a scientific calculator for ease of calculations.

Repeated as A29
H20 Down To Earth Mathematics
Workshop
Leigh Thompson - Glenvale, Bairnsdale Campus, VIC
Luke Blythman - Victoria University, VIC
How far is it around the earth? This question can elicit a wide range of responses. It can open up more issues such as the definition of a metre, equatorial circumference, polar circumference, great circles, meridians of longitude, parallels of latitude, bearings and how far is it to the centre of the earth. As the earth has a near circular orbit and is almost spherical, circle properties and pi arise. Further asking what does the size of the earth have to do with the size of a sheet of A4 paper is usually met with bewilderment? This presentation uses pen and compass to understand pi, shows how algebra and the earth’s circumference are related to A, B and C series paper size and more. It aims to tap into the curiosity of students.

Note: Please bring a USB flash drive or similar to obtain copies of resources (including movies). Scissors, glue and a drawing compass may be useful if you can bring them.

Repeated as G23

H21 Lies, Damned Lies, and Statistics
Workshop
John Bament - O’Loughlin Catholic College, NT
The Australian Bureau of Statistics CensusAtSchool is a nation-wide annual project that collects real data relevant to students. Your students can be part of this and access the rich data that has been collected since 2006. See how easy it is to download a random sample or data that has already been ‘cleaned’ and formatted for Excel and graphics calculators. We will then use electronic technology to analyse this data and investigate various statistical approaches we can undertake to enrich students understanding of Statistics.

Not repeated

H22 An Introduction to Programming in Scratch
Lecture
Jan Honnens - Christ Church Grammar School, WA
Scratch (http://scratch.mit.edu/) is a free graphical programming language where students can seamlessly create programs by snapping graphical blocks together into stacks. In this session we will construct some simple Scratch programs dealing with polygons, coordinates, transformations and fractals that feature in our Year 7 Scratch Programming Project.

Note: Please, if possible, bring a laptop with Scratch 2.0 installed.

Not repeated

H23 Mathemagical Marvels to Liven Up Lessons
Lecture
Andrew Wrigley - Somerset College, QLD
An interactive and entertaining stroll through a variety of mathematical ideas to spark interest and discussion. Basic number operations, algebra, geometry and probability are covered and a calculator will be useful. Participants will be invited to share their own ‘tricks of the trade’.

Repeated as G24

H24 SpyClass: An Adventure in Game-Based Learning
Workshop
Evan Curnow - Jacaranda, VIC
Brent Ramsay - Jacaranda, VIC
Commercial Presentation
SpyClass is an online game combining comic book-style art with problem-based learning to allow mathematics students to hone their problem solving skills in an exciting and immersive environment. By completing a series of tasks, the student assists the games’ protagonists; three teenage spies named Dan, Jesse and Toby, to fulfil a range of missions set in exotic locales. SpyClass transports students beyond the classroom while giving them challenges that are firmly based on the Australian Mathematics Curriculum.

Note: Please bring either a laptop or a tablet computer to experience SpyClass first hand.

Repeated as G28

H25 From Geometry to Algebra with Polygons
Lecture
Andrea Van Graan - St Mark’s Anglican Community School, WA
This session will look at how facilities on the CAS calculator can be used to help students investigate internal and external angles of polygons. Interactive notes and spread sheets will be used to help students discover the rules and patterns involved.

Repeated as C29
H26 Harnessing Aboriginal and Torres Strait Islander Data – ABS Products Supporting Statistical Learning
Lecture
Frances Mawdsley - Australian Bureau of Statistics, VIC
The ABS publishes statistical products which provide opportunities to explore a range of data relevant to the lives of Aboriginal and Torres Strait Islander Australians. This session aims to provide suggested entry points for Australian teachers to explore and harness ABS data, applying them to learning about Aboriginal and Torres Strait Islander Australians through authentic data. This session has relevance to the Statistics and Probability content strand, the general capability of Numeracy, and the cross-curriculum perspective of Aboriginal and Torres Strait Islander Histories and Cultures.
Note: Participants are encouraged to bring a laptop or tablet to follow exploration of the ABS and Education Services websites.
Repeated as A34

H27 Expansion and Factorisation
Workshop
Stephen Swift, QLD
The concepts of expansion and factorisation can be introduced using hands-on materials so that students develop the ideas and transfer learning to the standard written methods. The materials can be made by students so they take ownership and this helps to engage students. The methods shown assist with chunking and the transfer of learning to long-term memory, while providing a back-up for weaker students. All students can learn to expand and factorise binomial brackets and quadratic expressions using these methods. While it is best for students to make the materials themselves, participants will use pre-made materials for the workshop.
Not repeated

H28 If Size Doesn’t Matter, Context Definitely Does
Workshop
Alexandria Dowson - Guildford Young College, TAS
One of the most resistant of questions in education is why students continue to have difficulty retaining information. A possible solution to this question may lie in the fact that students struggle to link mathematics to their life. This is especially evident with students who experience poor estimation skills in mathematics. The main element of the Meaningful Measurement unit involves a housing measurement activity where the students design their dream house using estimation, scale drawing, paper models and Google Sketch-Up to create their design. The second activity in the workshop, “Left in the Car”, looks at surface area of adults and children in relation to heat loss.
Repeated as B34

H29 Pythagoras Flirts with Lumeracy and Technology in the Aegean Sea
Workshop
Rama Ramakrishnan - Elsie-Rajam Private School, WA
Mathematics has its own value and beauty and the Australian Curriculum states: Mathematics aims to instill in students an appreciation of the elegance and power of mathematical reasoning. Mathematical ideas have evolved across all cultures over thousands of years, and are constantly developing. Digital technologies are facilitating this expansion of ideas and providing access to new tools for continuing mathematical exploration and invention. The presentation will demonstrate how the Pythagorean Theorem can be presented to Middle and Upper school students with flair. It uses Lumeracy resources with the aid of contemporary computer algebra system based technology. This is not just a change in mathematics teaching but a paradigm shift in mathematics pedagogy.
Note: Please bring laptop or TI-Nspire machine with basic Navigator use knowledge.
Repeated as B37

H30 Mathematics of Oceans - Waves Sharks and Ships
Lecture
Paul Pascoe - St Francis Xavier College Berwick, VIC
A lecture style presentation covering Surfing, Tsunamis, and Harnessing Wave Power. Several Algebra Equations and Graphs will be presented which are used to describe wave motion and behaviour. The mathematics of how to successfully catch waves of various sizes and speeds on a surfboard will also be discussed; as well as Surfboard Design and Geometry. The mathematics of Sharks includes the hunting patterns used by sharks, biting force of shark jaws, as well as the use of ratio and proportion to reconstruct the giant ancient shark: “Megalodon”. Some mathematical aspects of Ships sailing the oceans will also be discussed.
Repeated as B38
H31  Why Cubic Polynomial Functions?
Computer Workshop  Years 7 to 12
Dr David Leigh-Lancaster - VCAA, VIC
Antje Leigh-Lancaster, VIC
In this session we will consider what one might present and why one might present it in an introductory study of cubic polynomial functions and related graphs and algebra. The CAS Mathematica will be used to explore some of these considerations. Previous experience with Mathematica is not required. However some familiarity in working with mathematical software in a windows environment would be helpful.

Note: Participants should bring along a USB if they wish to be able to copy notebook files from the workshop.
Repeated as B39

H32  An Overview of Mathematica and Wolfram|Alpha for Years 7-12
Lecture  Years 7 to 12
Craig Bauling - Wolfram Research, USA
This seminar gives an overview for using Mathematica and www.WolframAlpha.com in Years 7-12 classrooms. Topics include using free-form English language to compute, engaging students in deeper exploration, creating lesson plans and quizzes, accessing the vast library of pre-built learning materials, and using built in real-world datasets as examples for exploration. Examples from the ACARA standards in Statistics, Math and Sciences will be used to guide the discussion. Participants will receive session materials for later reference.
Repeated as A35

H33  The Pedagogical Advantages of the Wireless Networked Classroom
Lecture  Years 7 to 12
Dr Ray Williams - St Mark’s Anglican Community School, WA
This workshop provides participants with an opportunity to experience all aspects of the interactive capacity of the wireless connection of TI-Nspire devices (both calculator and netbook) to the teacher’s computer in the classroom. The ability to place a student in the role of ‘teacher’ provides a most useful degree of freedom for the teacher and results in immense pedagogical gains in the classroom.
Repeated as D32

H34  Going SOLO in Mathematics
Workshop  Years 7 to 12
Diane Farrell - John Monash Science School, VIC
Kimberley McGillivray - John Monash Science School, VIC
How do you ensure that students know where they are in their learning and more importantly how they can improve? What happens when they get stuck? Are they sitting waving their hands waiting for you to get them unstuck? Diane and Kim have been tackling these universal issues in the maths classroom using the shared language of the SOLO Taxonomy. In this interactive workshop Diane and Kim will share how they enable learners to take ownership of their learning using SOLO based graphic organisers and moving on maps, engaging learners in self-reflection and empowering individuals to take control of their learning.
Repeated as G38

H35  Developing Students Sample-To-Population Inferential Reasoning
Lecture  Years 8 to 12
Dr Michelle Dalrymple - Cashmere High School, NZ
Developing student understanding of formal statistical inference methods has always been a challenge in the classroom. The world-leading New Zealand Statistics curriculum takes students on a journey that includes hands-on activities, “movies” and other visual representations to move students from informal to formal inferential thinking over a four year time frame. Emphasis is placed on using appropriate language to tell stories with data. This session will give a brief overview of this learning trajectory from Year 10 to 13, specifically in relation to comparison situations, and some practical experience with some of the key teaching activities.
Not repeated

H36  Working in the Classroom with the New ClassPad fx-CP400 CAS Calculator
Workshop  Years 10 to 12
Charlie Watson - The Tuition Centre, WA
This workshop is for teachers to develop their skills with the new, colour, Casio ClassPad fx-CP400 CAS calculator. We’ll try new functions, explore the new keyboard and menu layouts and see how easy it is now to load apps from either a PC or Mac computer. We’ll also briefly look at how to update eActivities and programs to run smoothly on the new model. Participants are assumed to have a reasonable working knowledge of the old ClassPad to keep up with the hands-on activities, but if you don’t, just come along, sit back and see what’s possible.

Note: Bring your own new model ClassPad handheld or computer with emulator if possible, but there will also be loan models to borrow.
Repeated as G46
H37  Graphing Gallery With the TI-Nspire CAS Calculator
Workshop  Years 10 to 12
Shane Dempsey - Baimbridge College, VIC
Peta Taylor - Baimbridge College, VIC

A Graphs page on the TI-Nspire provides many different options. During this hands-on session a number of uses, particularly those relevant to Mathematical Methods Units 1-4, will be covered.

Note: Spare TI-Nspire CAS calculators will be available.
Repeated as G47

H38  Team Teaching Senior Mathematics - Can it Work?
Workshop  Years 10 to 12
Ewan Campbell - John Monash Science School, VIC
Rebecca Cooper - Monash University, VIC

At John Monash Science School, most classes are taught by two teachers, including VCE Mathematics subjects. In this talk we will discuss the benefits of team teaching as well as some of the challenges created by this format. Included are some strategies for effective collaboration and planning used by our faculty and the technologies we use to support us. We will also give findings of research by Monash University into teacher and student perspectives of team teaching.
Repeated as D42

H39  Planning and Assessing SACs in VCE General/Further Mathematics
Lecture  Years 11 to 12
Sandra Wright - Hoppers Crossing Secondary College, VIC
Ronda Hazell - Hoppers Crossing Secondary College, VIC

We have developed a spreadsheet with key knowledge and skills for each area of study and topic. This information is then used to plan a SAC task/s that is designed to cover as much of the required skills and knowledge in a comprehensive and balanced manner as possible. This is also the basis for a spread sheet that is used to both mark and provide feedback to students. This is aimed at teachers who are new to teaching VCE Mathematics.
Repeated as G49

H40  Creating an Online Moodle Course for Your Mathematics Class
Computer Workshop  Years 11 to 12
Mehmet Altundal - Sirius College, VIC

Creating an online moodle course for your mathematics class. This session is for teachers who are thinking of creating an online course for their maths classes. In this hands-on computer workshop we will create a free course for each participant using moodle at www.vcemaths.com. Participants will have the opportunity to explore the features of their brand new online course.
◊ How to share documents with your students
◊ How to announce marks
◊ How to create and manage assignments for your students.
◊ How to create a homework forum

Note: Please create a free account at www.vcemaths.com before conference day.
Not repeated

H41  Quadratics, Straight Lines, Cubics, Tangents and Areas
Workshop  Years 11 to 12
Raymond Rozen - RMIT, VIC
Shirly Griffith - Jacaranda (Wiley & Sons Australia), VIC

Commercial Presentation
In this hands-on session several activities will be investigated using TI-Nspire. These include finding the area and volume bounded by a parabolic region and finding the area between a parabola and straight lines. We will also find tangents to a cubic and find the areas between these tangents and the cubic. Some very interesting and surprising results will be established. These activities will be demonstrated using TI-Nspire, however they are suitable for any CAS.

Note: Please bring along your TI-Nspire handhelds, laptop or even iPads with TI-Nspire installed.
Repeated as C47
Maximization Using Maple: Polya Approach with Multiple Representation – With or Without Calculus

Lecture

Professor Bill Blyth - Australian Science & Engineering Solutions (ASES) and RMIT University, VIC
Dr Asim Ghous - Australian Science & Engineering Solutions (ASES), NSW

Commercial Presentation

Maple, a leading Computer Algebra System (CAS), has supported student learning for 20 years at RMIT University. We revisit some “Find the maximum” problems typical of VCE calculus but use Maple to implement a detailed and structured Polya “How to Solve It” approach (used by first year mathematics students at RMIT University). As well as the calculus solution, we obtain the solution without calculus by exploration using visualization, animations and multiple representations – and prove that our proposed solution is correct (without calculus). Finally, we briefly discuss our assessment experience with e-Marking and Computer Aided Assessment with Maple or MapleTA.

Repeated as E46
Presenter Listing

Tony Allan - C25, G27
Mehmet Altundal - D45, H40
Dr Walid Amin - C44, F42
Lauren Anderson - B10, F10
Stephen Andrew - C32, G37
Mary-Anne Aram - C-D3, F-G6
Dr Stephen Arnold - A-B6, C-D4
Peggy Ashton - A-B2
Dr Catherine Attard - BK1
Daniel Avano - A24, B19, F19, G16
John Bament - A44, H21
Ron Barassi - F17
Prof John Barnard - D24
Caroline Barnett - A3, H2
Linda Baron - G10, H11
Gary Bass - B36, G36
Heidi Bassler - A22
Craig Bauling - A35, C-D6, F-G9, H32
Katrina Birch - F38
Rudy Birs - C21, E20
Kristine Blacksell - G32
Tracey Blunden - C33
Prof Bill Blyth - C48, E46, G50, H42
Luke Blythman - G23, H20
Jennifer Bowden - B4, F3
Christine Boyer - B49, F49
Chris Bracken - D40, E40
Nathaniel Bradshaw - A15, B31, H8
Dr Leicha Bragg - E3, F4, G12, H13
Darren Brett - C24, E24
Debra Brooks - B28, D27
Russell Brown - A-B8, C40, F40
Ian Bull - B20, C19
Kim Bulluss - A11, B11
Elizabeth Burns - E31, F30
Douglas Butler - AK2, C30, D47, F50, G31
Greg Butler - C4, D3
Michelle Button - A-B5, F-G7
Dr Philip Button - A33, G30
Tim Byrne - A25
Stephen Cadusch - D16
Angela Callea - C38
Donna Callow - B28, D27
Rod Cameron - D4, F6
Ewan Campbell - D42, H38
Koreena Carlton - A28, B23
Jan Cavanagh - B26, F26
Yew Fook Chan - C37, G39
Colin Chapman - A30, B27
Michael Chapman - A48, F41
Dr Jill Cheeseman - B3, D20
Linda Cheeseman - A21, B14
Zoe Christie - E30, F29
Adj Prof Mike Clapper - A26, B21
Em Prof Philip Clarkson - C12
Meredith Clegg - A27, B22
Erin Cole - A28, B23
Peter Collins - E35, F36
Victoria Cook - E14, F16, G7, H6
Rebecca Cooper - D42, H38
Ellen Corovic - B4, F3
Rhys Coulson - C11, D12
Dr Mary Coupland - HK1
Stephen Cox - C13, D13
Phil Cristofaro - E7, G8
Leanne Cummings - C4, D3
Evan Curnow - B33, D29, G28, H24
Dr Michelle Dalrymple - H35
Paul Dann - A31, E25
Lorraine Day - C15
Scott Dealy - D16
Liza Dearing - C13, D13
Dr Craig Deed - D16
Shane Dempsey - G47, H37
Cathy Devlyn - B44
Dr Brian Doig - C16, D5, G13
Margaret Dolan - H5
Alexandria Dowson - B34, H28
Natalie Draper - F47
Julie Dupuche - B17, G14
Natalie Edwards - C13, D13
Natalie Erwin - F12, G11
Dr Michael Evans - A52, B45
Diane Farrell - G38, H34
Allesha Fecondo - A32, B32
Georgina Ferencz - A5, G4
Sue Ferguson - D6, G5
Gala Ferrari - C-D5
Dennis Fitzgerald - C34, D34, E37, F35
John Fitzherbert - D37, G40
Bethany Fitzpatrick - A22
Kate Flack - C-D2, F-G4
Tony Flack - C-D2, F-G4
Brad Foss - E30, F29
Anthony Fowler - E23, G22
Peter Fox - A-B8, D44, F48
Dana Frantz - D43, F43
Erin Gallagher - A36, D30, E34, F32
Kelly Gallivan - C6, D7
David Garner - D5
Sue Garner - F47
Chai Gek Mui - C18, D18
Benji Gersh - D8, F8
Dr Asim Ghous - C48, E46, G50, H42
Helen Gist - A7, E5
Freda Goddard - A45, F37
Sara Graf - C22, D23
Heath Graham - C8, D10
Shirly Griffith - C47, H41
Dr Brenton Groves - A47, G41
Assoc Prof Susie Groves - B16, D5, G43
VJ Gunawardana - E14, F16, G7, H6
Maggi Gunn - A51, E44, H18
Julie Hall - G3, H4
Pamela Hammond - E4, F5
Stephen Hanlon - A29, H19
Anthony Harradine - A46, D36, E38, F-G10
Chelsea Harrington - D16
Mary Harrington - A43, G35
Ronda Hazell - G49, H39
Bill Healy - E15, F18
Dr Sandra Herbert - E3, F4
Brendon Herron - D40, E40
Dr Tanya Hill - FK2
Luke Hindson - B13
Renee Hoareau - A8, E8
Brian Hodgson - A40, B35, C45, E31, F30, G45
Neil Holden - A38, F33
Prof Derek Holton - B29, E27
Jan Honnens - G26, H22
Assoc Prof Marj Horne - D15, F15
Samantha Horrocks - C38, G25
Iqbal Hossain - C21, E20
Wong Oon Hua - C18, D18
Prof Marnie Hughes-Warrington - CK2
Derek Hurrell - A13, C15
Thao Huynh - F20, H17
Rick Hynes - B13
Julia Inglis - C10
Dr Calvin Irons - FK1
Diane Itter - A22, E16
Luke Jackson - F17
Denise Jacobsson - A7, E5
Mohamad Jebara - D30, E34
Justine Johnston - A27, B22
Peter Jones - A-B11, F-G11
Rodney Jones - F23
Bina Kachwalla - A21, B14
Jane Kahle - A31, E25
Anna Kapnoullas - C13, D13
Dr Helen Keates - CK1
Nick Keating - A28, B23
Simon Kelly - A24, B19, F19, G16
Christopher Kellett - F7
Liz Kennedy - A3, H2
John Kermond - B46, G48
Rhonda Keysers - A7
Helen King - B15, D21
Jacqui Klowsa - A51, E44
Phillip Knight - C34, D34, E37, F35
Kellie Knoblauch - C-D5
Axanthe Knott - D26, F27
Jessica Koch - G12, H13
Richard Korbosky - A-B4, C-D5, E17, F-G2, H3
Dr Tomasz Kowalski - E41, F39
Dean Lamson - A49, B43
Lucy Lang - E16
John Lawton - C-D5, E32, G32
Averil Lee - E12, F14
Siu Mam Lee - C8, F11
Antje Leigh-Lancaster - A37, B39, G33, H31
Dr David Leigh-Lancaster - A37, B39, G33, H31
Dr John Lenaric - A33, G30
Christine Lenghaus - G17, H16
Narissa Leung - EK1
Fiona Lindsay - C4, D3
Yueh Mei Liu - A-B3, F-G5
Giovanni Liubicich - D43, F43
Sharyn Livy - C17, D17
Mark Ljubic - F23
Dr Chris Longhurst - C7, G9
Dr Esther Loong - A14, E3, F4
Dr Ian Lowe - A20, B6, C46, D9, E32, F31, G42, H7
Dr Gill Lunniss - H9
Alastair Lupton - E26
Rhonda Lyons - B24
Kate Maiden - H9
Kate Manuel - F13
Lauren Marriott - B7, G6
Sophie Matta - B25, G21
Justin Matthys - E21, F24
Frances Mawdsley - A34, H26
Lisa McLeish - A27, B22
Dr Andrea McDonough - B3
Kimberley McGillivray - G38, H34
Sara McKee - A28, B23
Amanda McLean - H5
Gael McLeod - B25, G21
Kevin McMenamin - C42, D41, E43, F44, G44
Allason McNamara - A49, B43, HK1
Vivienne McQuade - C26, E29
Peter Mein - C33
Geoffrey Menon - C41, D39
Sanjeev Meston - B42, E39
Mohit Midha - A-B5, F-G7
Robert Money - C39, D38
Kate Mongan - E23, G22
Gary Monopol - G3, H4
Carol Moule - B18, E19
Dr Judy Mousley - E3, F4
Frank Moya - A-B12
Mark Mudge - B5, G2
Dr Tracey Muir - C17, D17
Roslyn Mullins - C27, F28
Prof Willy Mwakapenda - A41, B40, C35, D33
Williams Ndlovu - A41, B40, C35, D33
Dr Wei Leng Ng - A39, C31
Lee Chooon Nga - C8, F11
Andrew Nicholls - A10, E9
Asaph Nkomo - A10, E9
Asaph Nkomo - A10, E9
Jennifer Palisse - EK2
Kathryn Palmer - A6, D5
Jodie Parsons - F22, G19
Paul Pascoe - B38, H30
Stuart Payne - B48
Catherine Pearn - A23, E18
June Penney - C6, D7
Sarah Peterson - A17, H12
Jon Phegan - C20, D19
Burkard Polster - GK1
Carmen Popescu-Rose - D31, F34
Michael Portaro - B7, F7, G6
Dr Anne Prescott - B17, C20, D19, G14
Rob Proffitt-White - A-B1, F-G3
Tim Purcell - F20, H17
Rama Ramakrishnan - B37, H29
Brent Ramsay - G28, H24
Dena Reddan - B13
Karen Reid - D31, F34
Yvonne Reilly - F22, G19
Debbie Reinholdt - A17, H12
Birsin Reynolds - A19
Angela Rogers - A16, E11
Robert Rook - C49, D48, F21, G18
Marty Ross - B41, C36, DK1
Raymond Rozen - C47, H41
Norrian Rundle - A-B7, F-G8
Chris Sacco - B7, G6
Ramila Sadikeen - A3, H2
Dr Ahmad Samarji - C23, F25
Maria Schaffner - B44
Melissa Sellick - E16
Shirley Sharpley - B33, D29
Anuja Singh - A11, B11
Robert Smart - C11, D12
Donald Smith - C39
Laurel Smith - C5
Marilyn Snider - C9, D10
Fiorella Soci - F12, G11
Veil Li Soo - A-B3, F-G5
Anthony Speranza - EK1
Andrew Spitty - B8, E6
Kyle Staggard - B48
Robert Steer - D26, F27
Dr Max Stephens - A23, E18, G20
Robyn Stephens - C3, D2
Kim Streek - A32, B32
Glenn Sullivan - D22, E22
Prof Peter Sullivan - H15
Nancy Surace - B5, G2
Dr Paul Swan - A13
Dr Philip Swedosh - A49, B43
Stephen Swift - B47, E45, H27
Hussein Tahir - A50, F46
Ian Taylor - A45, F37
Peta Taylor - G47, H37
Dr Wendy Taylor - D25
Bev Thompson - C5
Leigh Thompson - G23, H20
Robyn Trzeciak - H5
Assoc Prof Colleen Vale - E3, F4
Dr Peter Van der Kamp - E41, F39
Andrea Van Graan - C29, H25
Marcel Van Otterdyk - E36
Yuriy Verkhatsky - D46, E33
Rob Vermay - A-B9
Jennifer Vincent - A-B2
Victor Vu - F20, H17
Charlie Watson - C43, E42, G46, H36
Dr Wanty Widjaja - D5, E3, F4
Bruce Williams - A18, B12, C14, D14
Douglas Williams - A4, B2, C-D1, E13, F-G1, H10
Dr Gaye Williams - AK1, E3, F4
Dr Ray Williams - C28, D32, G29, H33
Lauren Williams - E16
Ashley Willis - G12, H13
Ian Willson - A42, G34
Richard Wilson - E21, F24
Neale Woods - A-B10, F45
Cassandra Worm - A22
Sandra Wright - G49, H39
Andrew Wrigley - G24, H23
Dr Ban Har Yeap - A12, D11
Lachlan Yeates - C22, D23

Oguzhan Yilmaz - D28
Alexander (Alec) Young - A9, B9, E10, F9